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VENUS' GIRDLE AND OTHER COMB-JELLYFISH

# THE UNITED EDITORS PERPETUAL ENCYCLOPEDIA

A LIBRARY OF UNIVERSAL KNOWLEDGE

COMBINED WITH AN

UNABRIDGED DICTIONARY

OF THE

ENGLISH LANGUAGE

MANAGING EDITOR

GEORGE EDWIN RINES

ASSISTED BY MORE THAN FIVE HUNDRED OF THE MOST EMINENT SCHOLARS AND SPECIALISTS

THIRTY VOLUMES

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# SCHEME OF SOUND SYMBOLS

## FOR THE PRONUNCIATION OF WORDS.

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*Note.*—(-) is the mark dividing words respelt phonetically into syllables; (′), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

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| Sound-symbols employed in Respelling. | Representing the Sounds as exemplified in the Words. | Words respelt with Sound-symbols and Marks for Pronunciation. |
|---|---|---|
| *ā* | mate, fate, fail, aye | *māt, fāt, fāl, ā.* |
| *ă* | mat, fat | *măt, făt.* |
| *â* | far, calm, father | *fâr, kâm, fâ′thėr.* |
| *ä* | care, fair | *cär, fär.* |
| *aw* | fall, laud, law | *fawl, lawd, law.* |
| *ē* | mete, meat, feet, free | *mēt, mēt, fēt, frē.* |
| *ĕ* | met, bed | *mĕt, bĕd.* |
| *ė* | her, stir, heard, cur | *hėr, stėr, hėrd, kėr.* |
| *ī* | pine, ply, height | *pīn, plī, hīt.* |
| *ĭ* | pin, nymph, ability | *pĭn, nĭmf, ă-bĭl′ĭ-tĭ.* |
| *ō* | note, toll, soul | *nōt, tōl, sōl.* |
| *ŏ* | not, plot | *nŏt, plŏt.* |
| *ô* | move, smooth | *môv, smôth.* |
| *õ* | Goethe (similar to *e* in her) | *gõ′tėh.* |
| *ow* | noun, bough, cow | *nown, bow, kow.* |
| *oy* | boy, boil | *boy, boyl.* |
| *ū* | pure, dew, few | *pūr, dū, fū.* |
| *ŭ* | bud, come, tough | *bŭd, kŭm, tŭf.* |
| *ú* | full, push, good | *fúl, púsh, gúd.* |
| *ü* | French plume, Scotch guid | *plüm, güd.* |
| *ch* | chair, match | *chär, măch.* |
| *ċh* | German buch, Heidelberg, Scotch loch (guttural) | *bôċh, hī′dėl-bĕrċh, lŏċh.* |
| *g* | game, go, gun | *gām, gō, gŭn.* |
| *j* | judge, gem, gin | *jŭj, jĕm, jĭn.* |
| *k* | king, cat, cot, cut | *kĭng, kăt, kŏt, kŭt.* |
| *s* | sit, scene, cell, city, cypress | *sĭt, sēn, sĕl, sĭt′ĭ, sī′prĕs.* |
| *sh* | shun, ambition | *shŭn, ăm-bĭsh′ŭn.* |
| *th* | thing, breath | *thĭng, brĕth.* |
| *ṫh* | though, breathe | *ṫhō, brēṫh.* |
| *z* | zeal, maze, muse | *zēl, māz, mūz.* |
| *zh* | azure, vision | *ăzh′ėr, vĭzh′ŭn.* |

# UNITED EDITORS' ENCYCLOPEDIA AND DICTIONARY.

INFANT, in Law: by the common law persons come to majority at the age of 21 years, until which time they are called in law *infants*, but by common usage in the United States the word minor prevails. Infants cannot, in general, bind themselves by contracts, as they are supposed not to have sufficient discretion and ability for this purpose. But this is their privilege, and their contracts are accordingly held in general not to be void, but only avoidable at their election; and they may elect to avoid their contracts during their minority, except such as they may have entered into for necessaries suited to their condition in life, but they cannot confirm them so as to be bound by them until their majority. Infants may possess property, but it must be under the management and control of a guardian. They have not the right of citizens as to voting, and discharging other political functions. But in regard to crimes and punishments, and trespasses and private wrongs, their conduct is regulated by the same laws as that of the other members of the community, in case of their being of sufficient age and discretion to understand their duties and obligations. And for this purpose no general limit can be assigned, as some children are much more intelligent than others of the same age; and it will again depend, in some degree, upon the nature of the offense committed, or the wrong done, whether a child of any given age can be considered legally guilty of it, since some offenses and wrongs can be more easily understood to be such than others. The law, in general, has a tender regard to youth, and does not permit them to be convicted and punished for offenses and trespasses unless it appears clearly that they have sufficient knowledge and discretion to distinguish them to be such. There are exceptions to the incapacities of minors as to contracting, and these exceptions are made for their benefit. Thus an infant not sufficiently furnished with necessary clothes, food, or instruction, by his parent or guardian, and not being under the immediate superintendence of

the parent or guardian, may make a valid contract in respect to those subjects, and such contract may be enforced against him. Infants require the consent of parents or guardians to marry. The jurisdiction in respect to infants is generally vested in either probate or orphan's courts. These courts appoint guardians to take charge of the property of infants, and, in case of the decease of the father, to take charge of their persons; but during the life of the father he has the guardianship and control of the persons of his children until they are 21 years of age.

Blackstone thus defines infant: 'Infants have various privileges, and various disabilities; but their very disabilities are privileges, in order to secure them from hurting themselves by their own improvident acts. An infant cannot be sued but under the protection, and joining the name of his guardian, for he is to defend him against all attacks as well by law as otherwise; but he may sue either by his guardian, or by his prochein amy, or alone for wages in the county courts. In criminal cases an infant of the age of 14 years may be capitally punished, but under the age of 7 he cannot. The period between 7 and 14 is subject to much uncertainty; for the infant shall, generally speaking, be judged *prima facie* innocent; yet if he was *doli capax*, and could discern between good and evil at the time of the offense committed, he may be convicted, and undergo judgment and execution of death, though he has not attained to years of puberty or discretion.'

INFANTA, *ēn-fân'tâ*, Philippines, a former Spanish commandancia of the island of Luzon, consisting of a narrow strip of territory on the Pacific coast with Nueva Ecija on the north and Tayabas on the south. In 1902 it was made a sub-province of Tayabas. The surface is very rough and mountainous and the construction of roads impossible except at heavy cost; several trails lead over the mountains to the central provinces. The forests are valuable, among the trees most important to commerce is the balate, which produces the balate gum. The agricultural methods are most primitive; the chief crops are rice, cocoanut, chocolate and coffee; the most important industry is the manufacture of nipa wine; there was formerly a large manufacture of cocoanut oil in Infanta, but this industry was paralyzed by the hurricane of 1882. Pop. 10,800.

INFANTICIDE, n. *ĭn-făn'tĭ-sīd* [Fr. *infanticide*—from L. *infantem*, very young; L. *cædo*, I kill]: act or practice of murdering infants; abhorrent to modern civilization, but common in ancient times, and now prevalent among many barbarous nations. It prevailed in Greece and Rome, and (such is the force of custom) found defenders even in Plato and Aristotle. The latter, in his *Politics*, says the law should forbid the nurturing of the maimed, and, where a check to population is re-

quired, abortion should be produced before the quickening of the infant. In Sparta, we are informed that when a child was born the law directed the father to carry it to an appointed place, to be inspected by the elders of the community. If they perceived that the limbs were straight, and its look was wholesome, they returned it to its parents to be educated; otherwise, it was thrown into a deep cavern at the foot of the mountain Taygetus; and it was said this law had a wholesome effect, for it made women with child very careful as to their eating, drinking, and exercise, and hence they proved excellent nurses. In the other Grecian republics, a similar disregard of the life of sickly infants was shown. With regard to the practice among the Romans, little definite information exists, though learned authors discuss it at great length. It seems certain that it lay with the Roman father to say whether his child should be permitted to live or not. The exposure of infants, indeed, was the rule rather than the exception in most countries in ancient times. Among the Norse, the child's life always hung in the balance till the father handed it to the nurse to be reared; if, on account of its being weak, or a daughter, he disapproved of its living, it was exposed to die by wild beasts or the weather. In modern times the practice is cruelly common among certain peoples. Child-murder prevails to a great extent throughout the South Sea Islands. Among the Fijians it was a system until the recent introduction of Christianity. A recent authority says that in Vanua Levu, in some parts, 'the extent of infanticide reaches nearer two-thirds than a half.' Among the Hindus, the practice of destroying children, especially females, prevailed frightfully, till it was checked in the time of the Marquis of Wellesley's rule. The Rajpûts, it is said, destroy all female children but the first born—a peculiar custom, due to its being a point of honor with a Rajpût to nearly ruin himself in the marriage feast and portion of his daughter, so that he could not afford to have more than one. The Mohammedans were inclined to the same practice, but effected their object chiefly by means of abortion. In New Holland, the native women have no hesitation in destroying, by compression, the infant in the womb, to avoid the trouble of rearing it alive. In China, infanticide is supposed to be common, the chief cause being said to be the right of periodically repudiating their wives, which is possessed by Chinamen. Some statistics published some time ago in a well-known French paper indicate the fearful extent to which life is lost through this practice prevailing in so vast a population as that of China. In all the cases above cited, it may be assumed there was no feeling of infanticide being wrong or criminal. In some, it was owing to religious feeling of a perverted kind; in some, to the difficulty of living; but in many, as among the Fijians, it appears that the

mother killed her child often from whim, anger, or indolence.

Christian civilization deals very strictly with this subject; for one of its maxims is that human life, from its first to its last instant, is sacred, and whoever wilfully puts an end to it is a murderer, or a criminal of the same category. Instead of encouraging the destruction of life, modern civilization abounds in every kind of machinery for preserving it, however unsuccessful the attempt. The chief cause which now leads to infanticide is shame, operative only in the case of the child being illegitimate: parents incur the risk of committing the crime of murder to avoid social disgrace. Therefore, to appreciate the force of the checks put by the law on the tendency to infanticide, the law of bastardy (q.v.), the practice of instituting foundling-hospitals (q.v.), and the kind and degree of the punishments attending any attempt more or less direct to destroy the child either before or after birth, require to be taken into account.

The criminal law deals with the cognate offenses which make up infanticide in the following manner, whether the child is legitimate or illegitimate: As regards the procuring of abortion, every woman who takes poison or other noxious thing, or uses instruments or other means, to procure her miscarriage, is guilty of a crime; so is any person who administers poison or uses instruments upon the woman with such intent, also any person who supplies drugs, poison, or instruments for the same purpose. See ABORTION (in criminal law). The concealment of birth also is made a criminal offense. Whoever, after a child is born, by any secret disposition of the body, endeavors to conceal its birth, is guilty of a misdemeanor. This is the offense which is most frequently made the subject of prosecution in such cases, as the attempt to establish the larger crime of murder to the satisfaction of a jury is frequently foiled by a secret sympathy toward the mother, who is presumed to have been the victim of seduction, or otherwise wronged. The existence of this offense shows the necessity for every woman about to become a mother to make known her situation to some extent. As the destruction of children may be effected by the negative fact of not supplying food and clothing, as well as by the positive act of wounding or ill-treating, the refusal or neglect of a parent or other person bound by law to supply food and clothing to the child, and who by such neglect causes its death, amounts either to murder or manslaughter, according to the circumstances. Moreover, the unlawful abandoning or exposure of any child under the age of two years whereby the life and health of the child are endangered is a misdemeanor. Where a person is charged with the murder of a very young child it is essential to prove that the child was in life. The test of this is not that it breathed, or had an in-

dependent circulation after it was separated from the mother, but it is enough that the child was fully born; hence, if a man strike a woman with child, so as to cause the death of the child, he is neither guilty of murder nor of manslaughter of the child. The judges of England, 1848, had to deliberately consider whether, though a child was still attached to the navel-cord, the killing of it was murder; and they held that it was. In all cases of the murder of infants, the question whether the child was fully born, and so the subject of murder, is generally one of medical jurisprudence, on which medical skill is needed to throw light, and medical men have well-known tests for ascertaining this important fact. Even when the act of infanticide—not being the result of the mother's ignorance—may fairly be regarded as a crime, its enormity is in some instances lessened in the eye of the law by the consideration of the physical condition and moral disturbance of the parent.

INFANT JESUS, Daughters of the Congregation of the: an order in the Roman Catholic Church. It owes its origin to Anna Maroni, a native of Lucca, who having come to Rome entirely destitute, succeeded by her industry in securing a competency. In more advanced years, her charitable feelings prompted her to establish an institution where poor girls should be instructed in such work as would enable them to earn a livelihood. The clergy approved of her plan, and afforded her much assistance, and it was finally established as a regular institution, and in 1673 Pope Clement X. acknowledged the existence of the society, gave it by-laws, and endowed it with sundry privileges, under the appellation of 'Daughters of the Infant Jesus.' The number of the 'Daughters' allotted to each convent was fixed at 33, in commemoration of the number of years Jesus lived upon earth. The novitiate lasts three years; the sisters make vows of poverty, chastity and obedience. Such as may wish to leave the convent are allowed to do so before taking the vows, but, in that case, they are to leave to the convent all they brought to it at their admission. Prayers and fasts are strictly enforced. The regular habit of the order consists of a wide, dark brown dress, and a white hood.

INFANTRY, n. *ĭn'făn-trĭ* [F. *infanterie*, foot-soldiers—from *enfant*, an infant, a young man: It. *infanteria*, foot-soldiers—from *fante*, a serving-man]: in *OE.*, the servants of the knights—so named because they walked on foot: foot-soldiers of an army as distinguished from cavalry; but not including engineers and army service-corps men, though these are not mounted. Among semi-barbarous nations, fighting on foot has always been considered less advantageous than fighting on horseback or in chariots; but as war has become a science, the principal strength of the armies is found to be in

their infantry. See ARMIES; TACTICS; WAR; UNITED STATES ARMY; etc.

IN'FANT SCHOOL. See KINDERGARTEN; FROEBEL; EDUCATION.

INFATUATE, v. *in-făt'ū-āt* [L. *infatŭātus*, made a fool of—from *in*, in; *fatŭus*, foolish: It. *infatuare:* F. *infatuer*]: to make foolish; to inspire with an extravagance, or with a foolish passion beyond the control of reason. INFAT'UATING, imp. INFAT'UATED, pp.: ADJ. affected by extreme folly; exhibiting a total want of prudence or judgment in the affairs of life. INFAT'UATION, n. *-ā'shŭn* [F.—L.]: a state of mind in which a person conducts himself without judgment, or contrary to reason—generally, or in regard to particular objects. —SYN. of 'infatuate': to besot; stupefy; mislead.

INFECT, v. *in-fĕkt'* [F. *infect*, corrupt, infected; *infecter*, to infect—from L. *infectus*, tainted, dyed—from *in*, in; *făcĭō*, I make]: to taint with disease; to corrupt; to communicate bad qualities to. INFECT'ING, imp. INFECT'ED, pp.: ADJ. tainted or corrupted, as by the communication of disease. INFEC'TION, n. *-fĕk'shŭn* [F.—L.]: the act by which poisonous matter or exhalations produce disease in a healthy body; that which taints or corrupts, as by communication from one to another. INFEC'TIOUS, a. *-shŭs*, having the quality of infecting; contaminating; apt to spread. INFEC'TIOUSNESS, n. *-nĕs*, quality of being capable of communicating disease. INFEC'TIOUSLY, ad. *-lĭ*. INFEC'TIVE, a. *-tĭv*, able or tending to taint with noxious matter or bad qualities. *Note.* —*Contagion* and *contagious* are used properly with respect to things which spread by contact or imitation—*infection* and *infectious* are usually restricted to a more hidden and diffusive power conveyed by the atmosphere; though this distinction is not always observed.—SYN. of 'infect': to poison; defile; vitiate; pollute.

INFECTION: the introduction of disease-producing micro-organisms in the body. Infection may result in a number of different ways. Micro-organisms may be introduced by means of direct injury. When a person falls and cuts the hand, the bacteria of pus-production or of tetanus may be so introduced, and blood-poisoning or tetanus may develop. Many infections come by means of the intestinal tract. Thus typhoid is commonly obtained from milk or drinking-water. The intestinal worms, tape-worm, roundworm, are contracted in this manner, and a number of other parasites, particularly the trichina, may come from infected food taken into the alimentary canal. Infection may also occur by means of the air-passages. The bacillus of tuberculosis is most often taken into the body in this way, and finding suitable soil, it causes the development of the dread disease. The bubonic plague is frequently contracted through the disease-germ entering the air-passages. At

the present time it is deemed not unlikely that a number of infectious diseases, notably influenza, diphtheria, scarlet fever, measles, whooping-cough, are contracted through the respiratory tract by infection with the exciting cause. Occasionally direct contact seems necessary for infection, as in gonorrhœa and syphilis. In malaria, and probably in yellow fever, the active agent that causes the disease is introduced into the body by the bite of an insect, the mosquito. In malaria one particular genus (*Anopheles*) serves as an intermediate host in the developmental history of the parasite, in a manner analogous to the history of the development of a number of the intestinal worms. It is not unlikely that a large number of diseases may be disseminated by the bites of insects of one kind or another. In all the infectious diseases the element of a real, live, and active contagion should never be overlooked. Infectious diseases do not spring out of nothing. There must be some sort of contact in order that a person become infected. A most important part of the treatment of all infectious diseases is the protection of other people by proper care of all one's own excretions during sickness. The doctrine so frequently taught by some that sickness is ignorance is an important half-truth. But for the ignorance of people concerning the proper care of those afflicted with infectious disease with reference to the protection of others, measles, diphtheria, scarlet fever, whooping-cough, typhoid fever, consumption, and a number of other maladies would be entirely eradicated from civilized communities.

INFEC'TIOUS DISOR'DERS, in Cattle: subject of special enactment, for protection of the public. The laws vary in different states; but it is usual to authorize inspectors to be appointed with power to enter cow-sheds and stables, and report if disease exists. Sometimes sound cattle that have been exposed are required to be slaughtered.

Penalties are imposed for turning out diseased cattle on uninclosed lands or in markets, for not purifying sheds, for not disinfecting railway cattle-trucks and steamboats. The owner is bound to give notice to the inspector of any symptoms of disease appearing; and the hay, straw, litter, or dung of infected animals cannot be lawfully removed except for the purpose of being destroyed, and with an inspector's license.

INFEFFMENT, n. *ĭn-fĕf'mĕnt*, or INFEFT'MENT, n. [*in*, into, and *feoffment*—from F. *fieffer*, to convey the *fief* or *fee* to a new-comer (see FIEF and FEE)]: in *Scot.*, the act of completing the title to land, etc., by giving symbolical possession of heritable property, the evidence of which is an instrument of sasine; the placing in possession of a fee or freehold estate. INFEFF or INFEOFF, v. *ĭn-fĕf*, and INFEFT', v.: see ENFEOFF.

INFELICITOUS, a. *ĭn'fē-lĭs'ĭ-tŭs* [*in*, and *felicitous*]:

unhappy; not prosperous. IN'FELIC'ITY, n. *-ĭ-tĭ* [F. *infélicité*—from L. *infelīcĭtātĕm*, ill-luck]: unhappiness; unfortunate state.

INFER, v. *ĭn-fĕr'* [F. *inférer*, to infer—from L. *inferrĕ*, to bring or carry into—from *in*, into; *fĕrō*, I bear or carry—*lit.*, to bear or carry into]: to deduce as a fact or consequence; to assume or draw, as a conclusion, from general facts. INFER'RING, imp. INFERRED', pp. *-fĕrd'*. INFER'ABLE, a. *-ă-bl*, or INFER'RIBLE, a. *-rĭ-bl*, that may be inferred or deduced from premises. INFERENCE, n. *-ĭn'fĕr-ĕns*, a conclusion drawn from previous arguments; a truth or proposition drawn from another truth or proposition which has been admitted, or which is supposed to be true. IN'FEREN'TIAL, a. *-ĕn'shăl*, deducible by inference. IN'FEREN'TIALLY, ad. *-shăl-lĭ*, by way of inference. —SYN. of 'inference': conclusion; deduction; induction; consequence.

INFERENCE: the mental process of deriving a new judgment from certain premises or assumptions; also the proposition itself resulting from such a process. It is a familiar fact that the mind passes naturally from given facts to more or less assured conclusions based upon them, as when we interpret a smile as signifying friendship, or expect that rain will follow a change in the appearance of the sky. When such mental transitions become explicit, so as to be susceptible of being arranged as a series of propositions, we have inference. Language reveals this process in the large class of assertions introduced by such words as 'for', 'because,' 'since', 'inasmuch as', etc. Inference is more or less experimental, and therefore subject to test by certain rules with regard to its correctness. Its two main types are called Induction and Deduction (q.v.). The study of these processes, and of the errors or 'fallacies' which frequently infect them, is a part of the science of Logic. See FALLACY.

INFERIOR, a. *ĭn-fē'rĭ-ĕr* [L. *inferĭŏr*, or *infĕrĭōrem*, lower—from *infĕrus*, beneath, below: F. *inférieur*]: lower, as in station, rank, age, condition, excellence, or value; of second-rate quality; not the best; subordinate; in *bot.*, applied to the ovary or fruit when it appears to be situated below the calyx, and to the part of a flower farthest from the axis: N. one who is in a lower station or rank than another. INFE'RIOR'ITY, n. *-ŏr'ĭ-tĭ*, a lower state of dignity, age, etc., than another. INFERIOR is often used to qualify scientific terms, indicating 'below, lower, inner,' and opposed to *superior*, which indicates 'above, upper, outer.' INFERIOR EXTREMITIES, the legs, as the lower parts of the body. INFERIOR TIDE, the tide which occurs at any place when the moon is below the horizon. THE INFERIOR PLANETS, those whose orbits are within that of the earth.—SYN. of 'inferior': second; secondary; minor; lower; less; below; younger.

INFERNAL, a. *ĭn-fĕr'năl* [F. *infernal*—from mid. L. *infernālis*—from L. *infer'ni*, those below—from *infer'nus*, lying below: It. *inferno*, hell; *infernale*, pertaining to hell]: pertaining to the lower regions; pertaining to hell; hellish; diabolical; fiendish. INFER'NALLY, ad. *-lĭ*. —SYN. of 'infernal': Tartarean; satanic; malicious; Stygian; devilish.

INFERO-BRANCHIATE, a. *ĭn'fĕr-ō-brăng'kĭ-āt* [L. *infĕrus*, below; Gr. *brangchiă*, gills]: having the gills arranged along the sides of the body under the margin of the mantle—applied to an order of gasteropodous mollusks.

INFEST, v. *ĭn-fĕst'* [F. *infester*—from L. *infestārĕ*, to trouble or vex—from *infestus*, made unsafe, hostile: It. *infestare*]: to trouble greatly; to disturb; to harass; to annoy by presence and numbers, as vermin: ADJ. in *OE.*, hurtful, dangerous. INFEST'ING, imp. INFEST'ED, pp.

INFEUDATION, n. *ĭn'fū-dā'shŭn* [L. *in*, into; mid. L. *feudum*, the property in land distributed by William the Conqueror to his followers: AS. *feoh*, cattle, riches (see FEE)]: the act of putting into possession of an estate or fee; the granting of tithes to laymen.

INFIDEL, n. *ĭn'fĭ-dĕl* [F. *infidèle*—from L. *infĭdēlĭs*, not trustworthy—from *in*, not; *fidēlĭs*, faithful: It. *infidele*]: an unbeliever; one who does not believe the Bible to be a revelation from God, or in the divine origin of Christianity; one not of the faith—applied by Mohammedans to Christians and *vice versâ;* applied sometimes to a skeptic or mere doubter concerning the Christian facts.—See FREETHINKERS; SKEPTICISM; DEISM; AGNOSTICISM; ATHEISM. ADJ. unbelieving; skeptical. IN'FIDEL'ITY, n. *-dĕl'ĭ-tĭ* [F. *infidélité*]: disbelief in revealed religion; unfaithfulness in married persons; breach of trust; treachery.—SYN. of 'infidel n.': unbeliever; deist; atheist; freethinker.

INFILTRATE, v. *ĭn-fĭl'trāt* [F. *infiltrer*, to infiltrate: *in*, into, and Eng. *filtrate:* F. *filtrer*, to filtrate]: to enter into a substance through its pores. INFIL'TRATING, imp. INFIL'TRATED, pp. IN'FILTRA'TION, n. *-trā'-shŭn*, [F.—L.]: the act or process of passing into the pores or textures of a body; the liquid or substance which has so entered.

INFINITE, a. *ĭn'fĭ-nĭt* [L. *infinītus*, boundless, unlimited—from *in*, not; *finītus*, ended or finished; *fīnis*, an end: It. *infinito;* F. *infini*, infinite]: without limits; unbounded; endless; perfect, as applied to God; immense; very large; N. that which is infinite; a boundless space or extent; the Almighty. IN'FINITELY, ad. *-lĭ*. INFINITESIMAL, a. *ĭn'fĭ-nĭ-tĕs'ĭ-măl* [F.]: infinitely small. INFIN'ITIVE, a. *-ĭ-tĭv* [F. *infinitif*—from L. *infinītīvus*]: denoting the simple uninflected form of the verb, as *to run* (see VERB). INFIN'ITIVELY, ad. *-lĭ*. INFIN'ITY, n.

*-ĭ-tĭ* [F. *infinité*]: unlimited extent of time, space, or quantity; immensity. INFIN'ITUDE, n. *-tūd*, state of being without limits; boundless number; infinity. INFINITE DECIMAL OR SERIES, one which cannot be brought to an end. INFINITESIMAL CALCULUS: see CALCULUS.—SYN. of 'infinite a.': boundless; unlimited; limitless; illimitable; immeasurable; interminable.

IN'FINITE: term concerning which there has been much controversy. Some hold that there corresponds to Infinity a distinct notion, which we are entitled to entertain and reason about, with the same confidence that we discuss measured intervals, as a yard or mile; while others maintain that the word is a name for a mere negative, amounting to a denial of all limits or bounds. Others maintain that while negative, it is subject to limitation, e.g. a straight line of infinite length is limited by the notion of not crooked, and again that it has neither breadth nor thickness. Sir William Hamilton goes so far as to say that 'the Infinite and Absolute are only the names for two counter-imbecilities of the human mind, transmuted into properties of the nature of things—of two subjective negations, converted into objective affirmations' (*Discussions*, p. 21, p. 21 Eng. Ed.). John Stuart Mill holds a similar view as far as the abstraction, 'The Infinite', is concerned. It has been maintained also by Locke that we have no positive idea of the infinite, that it was only the negative of an end or termination (*Essay Concerning Human Understanding*, book ii. chap. 17).

The notion of the infinite has, indeed, been admitted into mathematical reasoning, a circumstance that seems to imply that we could use it with exactness, and, consequently, it could not be altogether an incompetence or imbecility of the understanding. But, to this it is replied that mathematicians use the word under peculiar restrictions. They employ it in the two extremes of the infinitely great and the infinitely little. 'If we see a conclusion, which we can nearly attain by the use of a large magnitude, more nearly by the use of a larger, and so on without limit, that is to say, as nearly as we please, if we may use a magnitude as large as we please, but which is never absolutely attained by any magnitude however great, then such conclusion may be said, for abbreviation, to be absolutely true when the magnitude is infinite' (*Penny Cyc.*, art. 'Infinite'). The very same statement might be made regarding the infinitely small, which is represented in mathematics by the symbol for nothing, though it is not the same as nothing in the strictest sense, namely, the nothing caused by subtracting a quantity from itself, as two from two. It is nothing in this sense, that if added to a finite quantity, as 10, it produces no augmentation that can be made use of: the quantity for all purposes remains the same. The machinery of infinite quantities has a large part in the

higher mathematics, and is introduced to compare two things naturally incommensurate. Thus, in estimating the area of a curved surface such as a circle, in straight-lined spaces, e.g., sq. inches, the difficulty was surmounted by a sort of fiction, namely, by supposing the circle to be inscribed by a right-lined figure or polygon, of such a very great number of sides that they coincide to all intents and purposes with the curved circumference. The coincidence can never be perfect; but by imagining the sides to be smaller and smaller, and, consequently, more and more numerous, the difference between the polygon and the circle may become less than any assignable quantity, or, as it may be said, infinitely little, practically the same as nothing, so that the estimate of the area of the one will stand for the estimate of the area of the other. This device for overcoming the natural incommensurability of straight and curved, and of number and motion, is the real occasion of the mathematical use of the term in question, which use therefore may be said to be not an adequate evidence (though it certainly is an intimation), that the term infinite expresses a positive conception of the mind.

The existence of the infinite as a positive conception, however, depends on no such evidence. If evidenced at all, it will be first from a sphere other than the mathematical or the material; though intimations continually presenting themselves in these departments will be found to accord with the fact of such a conception as actually reached and rested in by the mind. These intimations are illustrative of it, and they add to its certainty. The infinite is a positive reality to the mind, because the mind, whenever awakened to deal with the problem of the universe, *cannot conceive of the infinite as not existing.*

When it is asserted that the infinite is not a 'positive conception,' what is meant is merely that it is not an *experience.* Space and duration—whatever may be our philosophy about them—are at least positive conceptions in the human mind; but they necessitate the conception of the infinite, inasmuch as no proper thinking can conceive of them as ultimately bounded or terminable in any direction.

Some philosophers assign the conception of the infinite to man's intuitive beliefs. Another class, declining to claim it as a direct intuition of the mind, assert that it is a conception which inevitably arises in the mind from the perception of the finite. Not entering into this question of philosophy, we have grounds for the assertion that, by one or another process, the infinite exists as a positive conception in the human mind. The arguments to the contrary seem to leave unnoticed the fact that the infinite *is present* to the human mind; and to content themselves with profound reasonings to

show that the infinite has no power or right thus to affirm itself positively to man. Though it were, as is asserted by some, a mere negation, it would not thereby lose its character of positiveness, since positive and negative are terms only relative and counterbalancing, and each is equally capable of being framed into a positive conception. The infinite is a conception that is inevitable as of a positive and productive reality, whenever the human mind deals with *being* as primal, or with present being as originating or beginning—and equally as not beginning. For the opposite view, ingeniously and brilliantly advocated by Mansel, see CONDITIONED, PHILOSOPHY OF THE; see also EXTENSION.

INFINITE: In Mathematics infinity appears under two related aspects. In the ordinary number system there is no number which represents the quotient of a finite number by 0. This gap is filled by the introduction of the ideal number $\infty$ called infinity. With this step the number system becomes perfect and all the ordinary processes, addition, subtraction, multiplication and division (except in the cases $0/0$, $0\infty$, and $\infty/\infty$) can always be performed and give a unique result in every case. It is here a question of forming a logical and perfect number system, irrespective of the concrete meaning to be assigned to the numbers. A second conception of infinity is a variable quantity, either positive or negative, whose numerical value increases without limit. Thus, as $x$ approaches 0, $1/x$ tends toward the number $\infty$ defined above. But here it is necessary to distinguish between $+\infty$ and $-\infty$, at least there are many cases where quite different results ensue according as the variable increases through positive or negative values. Thus $e^x$ approaches $+\infty$ or 0 according as $x$ tends toward $+\infty$ or $-\infty$. In Geometry the idea of a variable increasing without limit also prevails. Thus parallels are the limiting positions of lines whose intersection is removed to an unlimited distance. The *line at infinity* is the idealized limit of a line which is moved to infinity; in projective geometry parallel lines are regarded as meeting on the line at infinity. The *circular points* are two imaginary points of this line through which all circles are found, in the analytic theory, to pass. An infinitesimal is the reverse of the infinite, viz., a variable which approaches 0 as a limit.

INFINITESIMALS, in Mathematics: variable quantities which approach the limit 0. The $n$th part of a given length or of a given interval of time is an infinitesimal if $n$ is increased without limit. The difference between the arc of a circle and that of an inscribed or circumscribed regular polygon of $n$ sides is an infinitesimal under the same condition. When two variable quantities depend on each other, an infinitesimal change in the one usually produces an infinitesimal change in the other, the ratio of the two increments having a finite

limit. Sometimes this limit is 0, in which case the smaller infinitesimal is said to be of *higher order* than the other. Thus an arc and its chord have the limiting ratio 1 as they both approach 0, but their difference is of higher order than either of them. In the Calculus (q.v.) all infinitesimals of higher order are rejected, as they have no effect on the ultimate result. The sum of a number of infinitesimals may have a finite limit if their number increases rapidly enough to compensate for the diminution of each individual one. Thus $n$ numbers each equal to $1/n$ have the sum 1, and this remains true no matter how small they may individually be. This principle is conspicuous in the Integral Calculus, which for example, divides a solid into infinitesimal parts and adds together the volumes of these parts to get the volume of the whole solid.

INFIRM, a. *ĭn-fėrm'* [F. *infirme*—from L. *infir'mus*, weak, infirm—from *in*, not; *firmus*, strong, solid: It. *infermo*]: weak in bodily or mental health; feeble; irresolute. INFIRM'LY, ad. *-lĭ*. INFIRM'ITY, n. *-mĭ-tĭ* [F. *infirmité*]: or INFIRM'NESS, n. a failing; a fault; mental instability; a disease, malady, or defect. INFIRMAR'IAN, n. *-fėr-mär'ĭ-an*, a monk or nun having charge of the infirmary in a religious house; a religious person attending on the sick of his order. INFIRM'ARY, n. *-ă-rĭ* [F. *infirmerie*—from mid. L. *infirmārĭă*]: a hospital for the sick poor; a place for gratuitous medical relief.—SYN. of 'infirm': weak; enfeebled; debilitated; sickly; imbecile; unsound; unsolid; unstable;—of 'infirmity': failing; imperfection; weakness; frailty; foible; irresolution; debility; imbecility; feebleness; defect; malady.

INFIX, v. *ĭn-fĭks'* [L. *in*, into; *fixus*, fast, firm]: to fix or set in: to implant. INFIX'ING, imp. INFIXED', pp. *fĭkst'*.

INFLAME, v. *ĭn-flām'* [L. *inflammārĕ;* to set on fire—from *in*, in or on; *flamma*, flame]: *literally*, to set on fire; to kindle; to excite; to increase or augment; to exasperate; to heat the blood, as with wine; to grow hot or angry. INFLA'MING, imp. INFLAMED', pp. *-flāmd'*. INFLAMMABLE, a. *ĭn-flăm'mă-bl* [F.—L.]: that may be easily kindled; combustible. INFLAM'MABLY, ad. *-blĭ*. INFLAM'MABLENESS, n. *-bl-nĕs*, or INFLAM'MABIL'ITY, n. *-bĭl'ĭ-tĭ*, the state or quality of being readily set on fire. IN'FLAMMA'TION, n. *-mā'shŭn* [F.—L.]: redness and heat in some part of the body, accompanied with pain and swelling; heat; animosity. INFLAM'MATORY, a. *-tėr-ĭ*, tending to inflame or excite; marked by inflammation.—SYN. of 'inflame': to burn; irritate; provoke; fire; exaggerate; aggravate; incense; enrage; anger; heat.

INFLAMMA'TION: the most obvious symptoms or phenomena of inflammation when it attacks an external or visible part, are pain, redness, heat, and swelling, or, in the words of Celsus, 'rubor et tumor cum calore

et dolore.' The general characters of the process will be best understood by an assumed case. If a healthy man gets a splinter of wood or any other foreign body imbedded in any fleshy part, he begins to experience pain at the part, soon succeeded by redness of the skin, a firm and exremely tender swelling at and around the spot, and a sense of abnormal heat. These purely local symptoms are succeeded, if the inflammation reach a certain degree of intensity, by a general derangement of the vascular and nervous systems, to which various names, such as constitutional disturbance, symptomatic or inflammatory fever, etc., have been applied. If the foreign body is extracted, the probability is that all these symptoms will gradually abate until the part at length regains its natural appearance and sensations. In this case, the inflammation is said to terminate by *resolution*, and this is the most favorable mode of termination. If, however, the cause of irritation is not removed, or if the intensity of the morbid process exceed a certain point, the following phenomena occur: the swelling assumes a more projecting or pointed form, the part becomes softer, and the skin at its centre which is usually the most projecting part, becomes whiter. There is a sensation of throbbing pain, and if the skin be not divided by the knife, it finally breaks, and a yellow, creamy fluid, known as pus (q.v.), escapes, after which the symptoms rapidly abate. This termination is known as *suppuration*.

If the original injury was very severe, and the inflammation intense there may be actual death of the part affected. In that case, the red color of the skin becomes purple or greenish black, the pain ceases, and the part becomes dead and putrid. This is *mortification*, or *gangrene* if the part involved is of wide extent. Under favorable circumstances, this dead part, which is called a *slough*, if limited in area, spontaneously separates from the adjacent living parts by a vital process known as *ulceration* (q.v.), and the cavity thus formed gradually fills up and heals.

The *pain* may vary from mere discomfort to intense agony. There is usually most pain in those parts in which the tension produced by the swelling is the greatest, as in bone, serous and fibrous membranes, etc. The pain occurring in inflammation is always aggravated by pressure, and by this means the physician can often distinguish between inflammatory and non-inflammatory disorders. The *heat* is seldom so much increased as the sensation of the patient would lead him to believe; it does not rise above the maximum heat of the blood in the interior of the body. This increase of heat depends on the increased flow of arterial (or highly oxidized) blood to the part. The *redness* depends on there being more blood than usual in the vessels in the affected part. The *swelling* depends in part on the distention

of the blood-vessels, but mainly on the effusion of fluid.

Numerous observers have attempted to trace the exact phenomena of inflammation by microscopic examination of the transparent parts of animals in which the process has been artificially excited. From observation made on the web of the frog's foot and other transparent parts of animals the following general conclusions may be drawn.

1. The primary effect of a slight stimulus applied to the blood-vessels is a slight and gradual contraction, with a retardation of the current through them.

2. During this contraction, the blood is impeded, or altogether stops. But the vessels soon dilate to a size larger than they originally possessed, and the blood now moves through them more rapidly than in the normal state. The slight stimulus that previously caused the vessels to contract, has now, if reapplied, little or no effect; but on applying a more powerful irritant, the phenomena of active congestion or determination of blood become almost instantaneously developed. The vessels become dilated, and are distended with blood.

3. If the injury be still more severe then, in addition to the active congestion described in the preceding paragraph, there is a retardation, and finally a complete stagnation of the blood in the capillaries of the injured spot, while around it the blood moves rapidly through turgid but less full vessels.

The abnormal increase in the amount of blood in the part results in an effusion of fluids from the vessels—of serum and so-called coagulable lymph. This effusion of coagulable lymph is an important process both for good and for evil. When coagulable lymph is effused between membranes normally in contact (or nearly so) with one another, it often causes them to cohere. In this way we often have adhesions of the adjacent surfaces of serous membranes, such as the pleuræ, the pericardium, and the peritoneum, which materially interfere with the natural free motion of the parts, and occasion various persistent morbid symptoms. In inflammation of the iris, the pupil may be rendered irregular or immovable, or may even be closed by the effusion of coagulable lymph. In endocarditis, or inflammation of the lining membrane of the heart, coagulable lymph may be deposited in wart-like masses on the valves, and may thus occasion some of the worst forms of cardiac disease. On the other hand, in many cases, the effusion of coagulable lymph has a reparative and conservative influence. It is by the organization of this fluid that the lips of recent wounds are glued together, and that small parts recently severed from the body may be sometimes replaced and still live.

For inflammatory diseases of the most important organs, see the specific titles. As a general rule, the termination *-itis* is employed to indicate an inflamma-

tion: thus, pleuritis signifies inflammation of the pleura; peritonitis of the peritoneum: iritis of the iris; etc.

INFLATE, v. *ĭn-flāt'* [L. *inflātus*, blown into, caused to swell—from *in*, into; *flārĕ*, to blow: Sp. *inflar*, to inflate]: to fill and swell out with air; to blow in; to puff up; to elate. INFLA'TING, imp. INFLA'TED, pp.: ADJ. blown up; filled with air; pompous; full of high sounding words. INFLATION, n. *ĭn-flā'shŭn* [F.—L.]: the act of inflating; the state of being distended, as with air; the state of being puffed up, as with pride or vanity.

INFLECT, v. *ĭn-flĕkt'* [L. *inflec'tĕrĕ*, to bend or curve—from *in*, into; *flecto*, I bend]: to bend; to turn from a direct line or course; in *gram.*, to show the various changes of termination which a word undergoes. INFLECT'ING, imp. INFLECT'ED, pp. INFLEC'TION, n., or INFLEX'ION, n. *-flĕk'shŭn* [F. *inflexion*]: the act of turning from a direct line or course; in *gram.*, the act of putting a word through all its changes of termination; the rise or fall of the voice in speaking; modulation of the voice: in *optics* (see DIFFRACTION). INFLEC'TIONAL, a. *-ăl*, pertaining to the nature of an inflection. INFLEC'TIVE, a. *-tĭv*, having the power of bending.

INFLEC'TION, in Grammar: general term for all those changes that words undergo when placed in relation to one another in a sentence. (See DECLENSION; CONJUGATION; GENITIVE). Most of these changes occur in the end syllable or syllables of the word; and with regard to these at least, there is every reason to believe that they were originally separate words joined on to the root-words (see LANGUAGE), and that through the natural processes of phonetic change and decay, the compounds thus formed gradually assumed the forms now known in grammar as cases, numbers, persons, tenses, etc. In some instances, the original suffix can be readily recognized, and, by the help of Comparative Grammar, much has been done in recent times in tracing the more disguised inflections to their source; so that the greater part may be considered as satisfactorily established. Confining our remarks to the Indo-European languages, we may safely assert, that the syllables used in forming the cases of nouns and the terminations of verbs are of pronominal origin. Thus, *mi*, *si*, *ti*, as the endings of the three persons of the present singular of the verb, are evidently connected with the personal pronouns *ma*, *tva* (*sva*), *ta*; and the plurals *mas*, *tas*, *nti*, contain the same with an indication of the plural number. The nominative singular of masculines and feminines, ending in *s* (*equu-s*, *ἵππο-ς*, *fini-s*, *πιστι-ς*), contains the personal pronoun of the third person, *ta* (*το*, nom. *sa*, *ο*); the plural *piscēs*, *κσρακες*, is probably only a corruption of the same pronoun put twice (*pisci -sa-sa*—i.e., fish that and that), the doubling of the pronominal element expressing symbolically a plurality of the same thing. In the oblique cases, we meet with

other pronominal elements, which indicate that a certain thing is placed with regard to the predicate in the three fundamental directions of motion—those of *whither*, *where* and *whence*. The accusative is the exponent of the direction of an action *toward* some object, and its termination *m*, in the plural *ns* (i.e., *m* with the plural termination *s*), is connected with the pronomen *ama*, yon. I (comp. Lat. *i-s*, *i-d*, *i-bi*) is the pronominal syllable employed for signifying that an action has arrived at a certain goal, and is continuing there, giving the dative and locative cases; while the starting from a certain point is indicated by the pronoun of the third person, *ta*, and its equivalent *sa* (that), corrupted to *t* and *s*, the termination of the ablative and genitive cases. The dative and genitive of the plural express the same relations as the singular, though they are less clear as to their origin. If, notwithstanding the identity of terminations, the aggregate of nouns must, by a manifest analogy, be classified into several distinct declensions, this in most cases is to be accounted for by the difference of the formation of stems or bases previous to their coming in contact with the affixes. It is natural that the so-called crude forms should undergo a different process of contraction according to the nature of their final vowel. The dative *lupô*, from the crude form *lupŏ*, is as much a contraction of *lupo-i* as is the dative *finī* from *finĭ-i*. Consonantic bases, or of the vocalic, those which end in *u* (*v*), a vowel of a decided consonantic quality, are most apt to preserve the inflections in their unaltered form, being less liable to change on the conflict of congruous or incompatible elements. Accordingly, the third Greek, and the third and fourth Latin declensions, present a much more normal aspect of the original inflections than the others. This does not preclude the possibility of a peculiar inflection being preserved in one or other declension; for nothing is more certain than that language, at a certain stage of its development, created and applied a great variety of means to the same purpose, and that these became limited only when the rising intellect of the human tribes, and their distribution into larger or smaller political bodies, taught and compelled them to economize their ways of expression.

In the formation of certain tenses of the verb, we find a process different from the combination of a nominal or verbal base with a pronominal syllable. The Latin subjunctive of the first conjugation, the future in *bo*, the Greek optative and future, the Latin imperfect, and the perfect ending in *avi*, *ui*, *ivi*, consist of the verbal root with an already inflected form of the verbs *i*, to go, *as* and *fu*, to be. However strange this may appear at first, it is nevertheless a fact that, e.g., *ει'ην*, I would be (for *εσ-ιην*. Skr. *s-yâm*, Lat. *s-iem*), originally meant, I go (if I mistake not) in being, I am in doubt of the act of being; that *ποιη-σεις*, thou wilt do is literally translated,

'thou mayest be doing.' The Latin *i-bat* for *i-fuat*, or *i-vit* for *i-fuit*, is still more clearly, 'he was in the act of going.' That auxiliary verbs sometimes assume the function of inflections, is proved by the French future, where forms like *trouverai*, *finirai*, are easily recognized as compositions of the infinitive with the verb *avoir* (*finir-ai*, I have to finish).

The inflections hitherto described affect the end of words, and possess the character of a composition of a significative word or root with a syllable of local import, or an inflected form of a verb. But language employs other means of a symbolical nature, either in the middle or the beginning of verbs, with the object of representing the various aspects in which an action can appear. We find that the present tenses generally have longer forms than those of the past. The additions commonly used are long vowels or diphthongs, inserted nasals and semivowels, or, lastly, reduplication. It seems that the weight given to the verbal root by these appliances is intended to exhibit the continuance of an action in the present tenses, in contrast with the fleeting or momentary operation of the past. In a similar manner, the long vowels peculiar to the subjunctive in Greek (*τύπτετον-τύπτητον, τύπτομεν-τύπτωμεν*) convey the idea of doubt or uncertainty, by means of the longer interval required for the pronunciation of the intermediate long vowel, thus expressing the hesitation of the speaker with regard to the reality of his judgment. The reduplication in the perfect, being originally a repetition of the root (*tu-tudi*), is not so much the sign of a past time, as the symbol for an action having passed from the stage of incipience into that of completion.

The wear and tear of time exercises its influence as well on the radical part of words as on their inflections. Grammatical terminations of a totally different formation by corruption become obscured, and identical in shape with others of heterogeneous purport. The Latin *Romae* takes on itself the functions of *Româ-i-s* (gen.), of *Româ-î* (dat.), *Româ-i* (locat.), and *Româ-i-es* (nom. *plu.*); or *populo* those of *populô-î* (dat.), *populo-d* (abl.), and at a very early age that of *populo-m*. The absence of written standard works of such a national importance as to penetrate into the masses of a people, and to check their inclination toward misapplying or neglecting inflections which in progress of time have lost their inherent meaning, and therefore appear cumbersome, accelerate the change of the inflective system into the analytical. The demand for a precise, and, so to speak, material expression of those manifold relations, appropriated to inflections in ancient languages, is felt more keenly with the waning distinctness of the latter: and sudden political revolutions, such as the invasion of Italy by Teutonic tribes, or the conquest of England by the Normans, interrupting the influence of the privileged

classes of a nation, bring the struggle to an issue, and give the ascendency to the popular movement. Articles, prepositions, pronouns, auxiliary verbs, take in modern language the place of inflections; and notwithstanding that these are not entirely destroyed, they have a precarious existence, and are in danger of being finally supplanted by the tendency to represent every distinct relation of words to each other by a distinct expression. The application of the *s* as a mark of the possessive case becomes more and more limited in modern English, and the mistaken effort to supersede this relic of Saxon inflection by the substitution of the pronoun *his*, has been defeated because it proceeded from learned pedants, and not from the people. The termination *nt* as a sign of the plural in French verbs (*aiment, aimaient*), may be called almost a dead letter, only traditionally preserved in spelling. The loss of inflections has deprived modern languages of the wonderful simplicity and power of the ancient tongues, and the periphrastic mode of expression adopted in these languages prevents them from arranging all the parts of a sentence with the same degree of liberty. On the other hand, they have gained in perspicuity. After all, they have only reversed the process of the combination of pronominal and auxiliary words with others; but by placing them in front, the attention of the hearer or reader is called at once to the particular modification of every possible shade of a given thought.

INFLEXED, a. *ĭn-flĕkst'* [L. *inflexus*, bent, curved—from *in*, into; *flecto*, I bend]: turned; bent; in *bot.*, curved or bent upwards and inwards. INFLEXIBLE, a. *ĭn-flĕks'ĭ-bl* [F. *inflexible*—from L. *inflexĭb'ĭlĭs*, that cannot be bent—from *in*, not; *flexĭb'ĭlĭs*, pliant, flexible]: that cannot be bent; not to be moved or prevailed on by entreaty or argument; unyielding; inexorable. INFLEX'IBLY, ad. *-blĭ*. INFLEX'IBIL'ITY, n. *-bĭl'ĭ-tĭ* [F. *in'flexibilité*], or INFLEX'IBLENESS, n. *-bl-nĕs*, unyielding stiffness; obstinacy of will or temper.—SYN. of 'inflexible': unbending; stubborn; unrelenting; rigid; pertinacious; obstinate; firm; unalterable.

INFLEXION, n. another spelling of INFLECTION: see under INFLECT.

INFLICT, v. *ĭn-flĭkt'* [L. *inflictus*, let fly against, hurled at—from *in*, on; *flīgo*, I strike down]: to lay on; to impose, as a punishment or disgrace. INFLICT'ING, imp. INFLICT'ED, pp. INFLICT'ER, n. one who. INFLICTION, n. *ĭn-flĭk'shŭn* [F.—L.]: the act of laying on or applying; that which is applied; punishment or hardship imposed; a calamity. INFLIC'TIVE, a. *-tĭv* [F. *inflictif*]: able or tending to inflict; imposing a punishment.

INFLORESCENCE, n. *ĭn'flō-rĕs'sĕns* [F. *inflorescence*—from L. *inflōres'cens*, beginning to blossom—from *in*, in or on; *flores'cĕrĕ*, to blossom or flourish]: a flowering or putting forth blossoms: in *botany*, designating the

flowers of a plant considered as characteristic, i.e., collectively and with reference to the manner in which they are arranged and the succession in which they are developed. The flower-bud being a modified leaf-bud, and the parts of the flower modified leaves, it might be expected that the inflorescence should exhibit a close correspondence with the ramification of the plant, but the modification in the parts immediately concerned in the production of flowers is so great, that this is far from being the case. A most important classification of kinds of inflorescence is into CENTRIFUGAL and CENTRIPETAL (q.v.). When the flowering axis produces only a terminal flower, the inflorescence must be regarded as of the centrifugal kind. The terms used to designate more specifically the different kinds of inflorescence are numerous. For the principal ones see CATKIN; CONE; CORYMB; CYME; PANICLE; RACEME; SPIKE; UMBEL.

INFLUENCE, n. *ĭn'flû-ĕns* [OF. *influence*, a flowing in as of a supposed modifying power of the planets—from mid. L. *influĕn'tĭă*, a flowing into; It. *influenza*, influence, power—from L. *influĕns*, flowing into—from *in*, into; *flŭō*, I flow]: power supposed to be exercised by the planets—primarily a term of astrology; authority; sway; power of directing or modifying, seen or felt by its effects; ascendency: V. to move or affect by a moral force; to lead or direct; to move or affect by a physical power not palpably apparent, such as the atmosphere or electricity. IN'FLUENCING, imp. IN'FLUENCED, pp. *-ĕnst*. IN'FLUEN'TIAL, a. *-ĕn'shăl*, exerting a directing or modifying power over the minds of men. IN'FLUEN'TIALLY, ad. *-shăl-lĭ*.

INFLUENZA, n. *ĭn'flû-ĕn'zä* [It. *influenza*, influence, an epidemic catarrh (see INFLUENCE)]: severe epidemic catarrh or cold, attended with loss of strength and with fever. It has been long recognized by medical writers, though its English name is modern. Cullen called it *catarrhus e contagio*, but though, in most cases, it closely resembles ordinary catarrh, it presents certain points of difference. In addition to the ordinary symptoms of catarrh, there is a sudden, early, and very striking debility and depression of spirits. This early debility is one of the most marked and characteristic signs of influenza. The mucous membranes (especially the pulmonary membrane) are much affected. The tongue is white and creamy, the sense of taste is lost, there is no appetite, the pulse is soft and weak, the skin, though at first hot and dry, soon becomes moist, and the patient complains of pains and soreness in various parts of the body. In addition to this catarrhal, or respiratory, form we have the nervous, the cardiac and the gastro-intestinal forms, in which the nervous system, the heart and the digestive tract bear respectively the brunt of the influenzal attack. The most serious form is the car-

diac which frequently leaves the heart permanently crippled. Few diseases increase the death-rate to such an extent as influenza, more, however, in consequence of the great number of persons who are attacked in a severe epidemic than in consequence of its danger in individual cases.

Influenza affords an excellent example of an epidemic disease, a whole community being often attacked within a few hours. Like cholera, it generally follows a westerly direction, that is to say, it follows the course of travel and of trade from its permanent home in eastern Russia or central Asia toward western Europe and America. The disease is caused by a microbe called *Bacillus influenzæ* or Pfeiffer's bacillus after the investigator who discovered it.

The most important point in the treatment of influenza, of whatever form, is rest and avoidance of exposure to the inclemencies of the weather during the week or 10 days that an attack usually lasts. Among drugs, salicin, in doses of 10 grains four to six times a day, is perhaps the most serviceable. But in view of the fact that influenza is a treacherous disease, serious complications often arising suddenly and without warning, one should always be under a physician's care during the continuance of the attack.

INFLUX, n. *ĭn'flŭks* [L. *influxus*, flowing or running into—from *in*, into; *flŭō*, I flow]: the act of flowing in; infusion; importation.

INFOLD, v. *ĭn-fōld'* [*in*, into; and *fold*]: to wrap up; to inclose; to clasp, as with the arms. INFOLD'ING, imp. INFOLD'ED, pp. INFOLD'MENT, n. *-mĕnt*, act of infolding; state of being infolded.—SYN. of 'infold': to enwrap; embrace; clasp; wrap; involve.

INFORM, v. *ĭn-fōrm'* [F. *informer*, to inform—from L. *informārĕ*, to shape, to fashion—from *in*, in or on; *formo*, I form or shape: It. *informare—lit.*, to give form or shape to a thing]: to instruct; to communicate knowledge to, to make known to; to tell; to give intelligence. INFORM'ING, imp. INFORMED', pp. *-fōrmd'*. INFORMANT, n. *ĭn-fōrm'ănt*, one who communicates intelligence or news. INFORM'ER, n. *-ẽr*, one who makes it his business to lay facts of a criminal or illegal character before the authorities. INFORMATION, n. *ĭn'fōr-mā'shŭn* [F.—L.]: intelligence; knowledge derived from reading or instruction; an accusation laid against a person in a court of law (see INFORMATION, in Law). TO INFORM AGAINST, to accuse of a breach of law. INFORMED, a. [*in*, not, and *formed*]: in *OE.*, not formed; imperfectly formed.—SYN. of 'inform': to acquaint; apprise; advise; teach; in *OE.*, to animate; appear.

INFORMAL, a. *ĭn-fōr'măl* [*in*, not, and *formal:* Sp. *informal*]: contrary to established forms; not with the official forms; irregular; not competent. INFOR'MALLY,

ad *-lĭ*. IN'FORMAL'ITY, n. *-măl'ĭ-tĭ*, want of established or official forms; irregularity in form or procedure.

IN FORMA PAUPERIS, *ĭn fŏr'mă paw'pĕr-ĭs* [L.]: in the form of a pauper; applied to a person who obtains leave to carry on an action at law without paying the fees of court and other costs.

INFORMA'TION, in Law: an accusation laid against a person in court—a substitute for an ordinary indictment. There are also informations called *quo warranto*, to test the validity of an election or appointment to a public office, etc. The term is commonly used to denote the written statement often but not invariably made on oath before a justice of the peace, previous to the issuing of a summons or complaint against a person charged either with a crime or with an offense punishable summarily. By process of information associations and corporations may be brought into court to answer for infraction of law, or for violation of charter. In the United States courts information may be brought against minor offenses, but capital or infamous crimes must be prosecuted by indictment (q.v.). In some state courts, misdemeanors may be dealt with on information, but felonies only on indictment; in other states, e.g. Penn., either method is allowable.

INFOR'MER, in Law: person who sues for a penalty under some statute. In some statutes which define offenses—not criminal but savoring of criminality—encouragement is given to strangers to come forward and prosecute the offense, by giving them power to sue for the penalty for their own benefit in whole or in part. In England, when the informer sues in such an action, it is called a penal or *qui tam* action; but, in general, the penalty is now recoverable before justices of the peace in a summary way. In suits in chancery, which require to proceed in the name of the attorney general, the informer is called a relator. In the United States one who informs the government of the whereabouts of smuggled goods, counterfeit money, etc., is rewarded by a fee of ten per cent of the net value of the confiscated goods. In criminal law an informer is said to turn state's evidence (q.v.).

INFRA, *ĭn'fră* [L.]: the first element in certain scientific terms, signifying 'beneath; below,'—as *infracostal*, beneath the ribs. INFRA DIG., *ĭn'fră dĭg* [F. *infra*, beneath, below; and an abbreviation of *dignĭtātem*, dignity, rank]: beneath dignity; derogatory to one's dignity; unworthy of notice.

INFRACTION, n. *ĭn-frăk'shŭn* [F. *infraction*—from L. *infractĭōnem*, a breaking, a weakening—from *in*, into; *fractus*, broken—*lit.*, a breaking or weakening]: the act of breaking; breach; violation; non-observance.

INFRALAPSARIANS, n. plu. *ĭn'fră-lăp-sā'rĭ-ănz* [L.

*infra*, below; *lapsus*, a fall]: those Calvinists, known also as *Sublapsarians* (q.v.), who hold that the decrees of God were formed after His knowledge of the fall, and in consequence of it; opposed to SUPRALAPSARIANS, which see.

INFRANGIBLE, a. *ĭn-frăn'jĭ-bl* [F. *infrangible: in*, not and Eng. *frangible*]: that cannot be broken or separated into parts. INFRAN'GIBIL'ITY, n. *-bĭl'ĭ-tĭ*, or INFRAN'GIBLENESS, n. *-bl-nĕs*, the state or quality of being infrangible.

IN FRAUDEM LEGIS: a term used to imply that a thing is contrary to the law.

INFREQUENT, a. *ĭn-frē'kwĕnt* [L. *in'frĕquens* or *in-frĕquen'tem;* that does not happen often—from *in*, not; *frĕquens*, often, frequent: *in*, not, and Eng. *frequent:* It. *infrequente*]: rare; seldom happening. INFRE'QUENCY, n. *-kwĕn-sĭ*, or INFRE'QUENCE, n. *-kwĕns*, the state of occurring rarely; uncommonness. INFRE'QUENTLY, ad. *-lĭ*.

INFRINGE, v. *ĭn-frĭnj'* [L. *infringĕre*, to break to pieces—from *in*, into; *frango*, I break]: to break, as laws; to violate; to transgress; to encroach. INFRING'ING, imp. INFRINGED, pp. *-frĭnjd'*. INFRING'ER, n. *-ĕr*, one who. INFRINGE'MENT, n. *-mĕnt*, breach; violation, as of an agreement or right; non-fulfilment; the infraction of the copyright or patent-rights of another; encroachment.—SYN. of 'infringe': to trespass; break; destroy; hinder; non-fulfil.

INFRUCTUOUS, a. *ĭn-frŭk'tū-ŭs* [F. *infructueux*, unfruitful—from L. *infructŭōsŭs*—from *in*, not; *fructus*, fruit]: not producing fruit; unfruitful. INFRUCTESCENCE, n. *ĭn'frŭk-tĕs'sĕns*, in *bot.*, the character or condition of fruits which are multiple or polythalmic.

INFULÆ, n. plu. *ĭn'fū-lē* [L. *in'fŭlă*, a band]: in *ecclesiastical costume*, the pendants to the mitre.

IN FULL LIFE: a term used to indicate that a person is neither physically nor civilly dead.

INFUNDIBULAR, a. *ĭn'fŭn-dĭb'ū-lĕr* [L. *infundĭb'ŭlum*, a tunnel or funnel]: in *bot.*, having the form of a tunnel; funnel-shaped. INFUN'DIBU'LIFORM, a. *-dĭ-bū'lĭ-fŏrm* [L. *forma*, shape]: funnel-shaped, as a flower. INFUNDIBULUM, n. *ĭn'fŭn-dĭb'ū-lŭm*. INFUNDIB'ULA, n. plu. *-dĭb'ū-lă*, in *anat.*, a name given to various parts of the body which resemble a funnel; in *zool.*, a tube formed by the coalescence or apposition of the epipodia in the Cephalopoda, known also as the 'siphon' or 'funnel.'

INFURIATE, a. *ĭn-fū'rĭ-āt* [L. *in*, into; *fŭrĭātus*, driven mad; *fŭrĭă*, a fury, a fiend: It. *infuriato*, grown into a fury or rage]: enraged; mad: V. to enrage; to render furious; to madden. INFU'RIATING, imp. INFU'RIATED, pp.: ADJ. rendered furious or mad.

INFUSE, v. *ĭn-fūz'* [F. *infuser*, to infuse; *infus*, in-

fused—from L. *infūsus*, poured into, infused—from *in*, into; *fundo*, I pour: It. *infuso*, infused]: to pour in, as a liquid; to instil, as principles; to steep in water without boiling. INFUS'ING, imp. INFUSED, pp. *-fūzd'*. INFU'SIBLE, a. *-zĭ-bl* [F.—L.]: that may be infused. INFUSION, n. *ĭn-fū'zhŭn* [F.—L.]: the operation of steeping in water to extract the medicinal qualities of plants; a preparation or liquor obtained by pouring boiling water on a substance, as on tea (see INFUSIONS, below): *figuratively*, inspiration; suggestion; instilling. INFU'SIVE, a. *-fū'siv*, having the power of being infused.—SYN. of 'infuse': to pour in; inspire; steep; macerate; saturate; tincture; supply; fill; introduce; implant; inculcate.

INFUSIBLE, a. *ĭn-fū'zĭ-bl* [F. *infusible: in*, not and Eng. *fusible* (see FUSE)]: that cannot be melted. INFU'SIBIL'ITY, n. *-bĭl'ĭ-tĭ*, incapability of being melted.

INFU'SIONS, or INFU'SA, in Pharmacy: aqueous solutions of vegetable substances obtained without boiling. They are prepared usually by digesting in soft water (which may be either hot or cold) the sliced or powdered substance in an earthenware vessel fitted with a cover. Cold water is preferable when the active principle is very volatile, or when it is expedient to avoid the solution of some ingredient in the vegetable which is soluble in hot, but not in cold water. E.g., in preparing the infusion of calumba, cold water is preferable, because it takes up the bitter principle (which is the essential ingredient), and leaves the starch-matter undissolved. In most cases, however, boiling water is employed. Infusions are preferred to decoctions when the active principle volatilizes at a boiling heat, as in the case of essential oils; or when ebullition readily induces some chemical change, as in the case of senna (q.v.). Infusions may be prepared also by percolation (q.v.), which is extensively employed in preparations of tinctures. When thus prepared, they are less liable to decay than when prepared on the old system.

INFUSORIA, n. plu. *ĭn'fū-sō-rĭ-ă* [mid. L. *infusōrĭă*: F. *infusoires*—from L. *infūsus*, poured into, soaked]: very minute animal organisms or animalcules inhabiting water containing decaying vegetable or animal matter—so called from their being readily obtained in *infusions* of vegetable matter that have been exposed to the air; the name is now restricted to a class of the protozoa. IN'FUSO'RIAL, a. *-rĭ-ăl*, obtainable by infusion; pertaining to infusoria. INFUSORY, a. *ĭn-fu'zĕr-i*, applied to an order of animalcules obtained in infusions; containing infusoria.—*Infusoria* form a class of the sub-kingdom of animals called PROTOZOA (q.v.). The term, originally almost synonymous with Animalcules (q.v.), is now much restricted in its signification. It was used first by Otto Friedrich Müller, and was adopted by Cuvier, who made the infusoria the last class of *Radiata*

(q.v.). But their radiated structure is not established. No distinct trace of nervous matter has been found.—After Müller (1773–86), the next to give special study to the infusoria was Ehrenberg, the publication of whose work (1837) made an era in the history of this branch of zoology, which has since been prosecuted with great industry by Dujardin, Stein, Lachmann, and Claparède, Cohn, Lieberkuhn, Rymer Jones, and others. Many of the organisms included by Ehrenberg, as by previous naturalists, among infusoria are now generally regarded as vegetable (see DESMIDIÆ and DIATOMACEÆ); while others, as the *Cercaiæ* (q.v.), have been discovered to be immature states of Entozoa. The *Rotifera* (q.v.) are now also, by general consent, widely separated from the *Polygastrica* of Ehrenberg, for which alone the term infusoria, though not unobjectionable (see ANIMALCULE), is retained; the term *Polygastrica* [Gr. many-stomached] being rejected as erroneous. Agassiz affirmed that the infusoria were all immature or larval worms. But of the forms known, it is probable that many are those of immature creatures; certainly some species assume very different forms at different stages. Saville Kent, in his great *Manual of the Infusoria* (3 vols. 1882), uses the term only of mouth-bearing Protozoa and a few others, and divides the whole into (1) *Flagellata*, (2) *Ciliata*, (3) *Tentaculifera*. See the classification of the Protozoa, under ZOOLOGY.

Some of the infusoria are large enough to be individually visible to the naked eye, but most of them are altogether microscopic. Their bodies are composed of *sarcode*, a glutinous diaphanous substance, of which the outer layer sometimes forms a more or less resisting integument. The body has some well-defined form, of which the varieties are very great in different species. Many are furnished with *cilia*, the motion of which carries them with great rapidity through the fluid in which they live, by means of which also currents are created in the fluid to bring food to the mouth. The mouth is very generally surrounded or largely provided with cilia. Whether these organs are under the control of will, or obtain their motion without will or even consciousness on the part of the creature, like the cilia of the epithelium in higher animals, is not determined. There is an analogy in favor of the latter opinion, and many appearances—which, however, the phenomena of zoospores, etc., teach us to regard as possibly deceptive—in favor of the latter. Some infusoria, instead of cilia, have a few slender filaments, which they agitate with an undulatory movement; others move by contractions and extensions of their bodies. Some have stiff bristle-like organs, which they use as feet for crawling on the surfaces of other bodies; and some have hooks, by which they attach themselves to foreign bodies.

All these animals have a distinct mouth, and many

have also an anal opening, sometimes near the mouth, sometimes at the opposite extremity of the body. Between these Ehrenberg imagined that he could trace an intestine, straight in some, variously bent in others, with which along its course many small stomachs are connected; while in the infusoria, having only one aperture, he supposed all the stomachs to open immediately from it. But other observers have failed to find the canal and stomachs, though Ehrenberg's experiments, by means of fluids colored with indigo and carmine, have been often repeated. And it seems probable that the food taken into the mouth is simply conveyed into the midst of the soft gelatinous substance of the body, being formed into pellets as it passes from the mouth through a kind of gullet in the firmer integument. The food consists of organic particles of various kinds, and different species have been remarked to show a preference, like those of higher animals, for particular kinds of food. Many of them feed on microscopic plants and other infusoria. Their great use in the economy of nature is probably to consume organic particles, the decomposition of which would otherwise be baneful to all life, and the return of which by decomposition to their primitive elements would diminish the fertility and wealth of the world. The numbers of the infusoria are prodigious. They are found in all parts of the world, in fresh and salt water, in stagnant ponds and ditches, in mineral and hot springs, and in moist situations. Any infusion or other liquid containing vegetable or animal matter, if left exposed to the atmosphere, is sure to be full of them. Their multitudes are so great that leagues of the ocean are sometimes tinged by them. Some, which, instead of swimming freely, like most of their class, become surrounded with a gelatinous substance, are found adhering together in masses sometimes four or five inches in diameter, though the individual animals are so small that a cubic inch of the mass may contain 8,000,000 of them. The number contained in a single cup of putrid water may exceed the whole human population of the globe.

Their organization is still very imperfectly known. There appears in many of them a cavity not far from the mouth, the *contractile space*—variously regarded as a cavity without proper walls, or as a vesicle—from which branches sometimes radiate through the substance of the body, and which, being capable of contraction and expansion, is regarded by some as the centre of a kind of vascular system. It is with considerable probability regarded as furnished with proper walls. There is also, probably in all, another organ evidently of great importance, though its use is uncertain, called the *nucleus*, usually roundish or a little elongated, sometimes much elongated and band-like. It is enveloped in a membrane, and is more compact than the surrounding

substance. In the multiplication of these animals by spontaneous division, a fission of the nucleus always takes place. Each of the halves becomes furnished with a complete mouth, set of cilia, and other organs. The division, in the same species, is sometimes longitudinal, sometimes transverse, perhaps alternately longitudinal and transverse. The multiplication of the infusoria in this way is extremely rapid. A *Paramœcium*, well supplied with food, has been observed to undergo division every 24 hours, from which would result 16,384 individuals in a fortnight, or 268,435,456 in four weeks. Reproduction takes place also by gemmation; buds or gemmules forming on the outer surface of the body, and gradually assuming the shape of the parent animal, though they do not attain their full size till after separation. More extraordinary is another mode of reproduction by *encysting* or *encapsulation*. The animal contracts, closes its mouth, becomes surrounded by a viscid secretion and finally by a membrane, becomes attenuated, and dissolves, all but the nucleus, into a mere liquid containing granules, which afterward form within the cyst a new infusorium, different in form and appearance from that by which the cyst was produced. The metamorphoses of the class have been traced to a certain extent in some kinds, but not fully in any. Whether any truly sexual propagation takes place, has not been perfectly ascertained, though the observations of Balbiani have made it extremely probable as to some of them. A reproduction, different from all above mentioned, has been observed in some, by the formation of internal germs, to which this character has been ascribed, but the subject is still involved in doubt, nor is it improbable there may be among these minute creatures a production of real eggs which has hitherto eluded observation.

In the integument of some infusoria, very minute fusiform bodies are thickly imbedded, called *trichocysts*, capable of throwing out long filaments. Their use is unknown, though they are supposed to be urticating organs. The filaments are thrown out when the animal is subjected to annoyance by the drying up of the liquid in which it lives, or by the application of some irritating liquid.

INFUSO'RIA, Fossil. See Diatomaceæ.

ING, n. *ĭng* or *ĭnj* [AS. *ing:* Icel. *eng*, a meadow]: in *OE.*, a meadow, generally one near a river; a common pasture.

INGALLS, *ĭng'galz*, John James, ll.d.: statesman: b. Middleton, Mass., 1833, Dec. 29; d. Los Vegas, New Mexico, 1900, Aug. 16. He graduated at Williams College 1855, was admitted to the bar 1857, removed to Atchison, Kan. to practice 1858, was member of the Wyandotte constitutional convention 1859, secretary of

the Kansas territorial council, 1860, secretary of state senate 1861, state senator and unsuccessful candidate for lieutenant-governor 1862, editor of the *Atchison Champion* 1863–66, again defeated for lieutenant-governor 1864, elected U. S. senator as a republican 1872, 78, and 84, and was president pro tem. of the U. S. senate 1887–91. He was defeated for senator in 1891, and subsequently devoted himself to writing and lecturing.

IN'GALLS, Rufus: soldier: b. Denmark, Me., 1820, Aug. 23; d. 1893, Jan. 15. He graduated at the U. S. Milit. Acad. 1843; served in the rifles and dragoons and in the Mexican war; entered the quartermaster's dept. U. S. A. as capt. 1848, Jan. 12; accompanied Col. Steptoe's expedition across the continent; was on staff duty with Gen. Harney at Fort Vancouver 1856–60; appointed aide to Gen. McClellan with rank of lieut.col. 1861, Sep. 28; was chief quartermaster of the Army of the Potomac 1862–65; promoted brig.gen. of vols. 1868, and col. and asst. quartermaster-gen. U. S. A. 1866; brevetted brig.gen. and maj.gen. U. S. A. 1864–65, mustered out of the vol. service 1866, Sep. 1; chief quartermaster at New York 1867–76, 1881–2; promoted quartermaster-gen. U. S. A. 1882, Mar. 14; and placed on the retired list 1883, July 1.

INGATE, n. *in'gāt:* in *found.*, the aperture in a mold at which the metal enters; it then passes by runners to the spaces made vacant by the withdrawal of the pattern. The ingate is technically called the tedge, gate, geat, or git. The last two are corruptions of gate.

INGATHERING, n. *in-găth'ĕr-ing* [*in*, into, and *gathering*]: harvest; the act of securing the fruits of the earth.

INGELOW, *in'je-lō*, Jean: author: b. Boston, England; 1830; d. 1897, July 19; daughter of William I., a wealthy banker subsequently of Kensington, England. She was educated at home, and published her first vol. of poems 1863. This effort at once met favor in England and the United States, and encouraged her to become one of the most charming writers of English literature. Her poetical works are: *Poems*, including *High Tide on the Coast of Lincolnshire*, 1571, etc. (1863), *A Story of Doom, and Other Poems* (1867), *Monitions of the Unseen*, and *Poems of Love and Childhood* (1870), and *Poems of the Old Days and the New* (1885); prose: *Tales of Orris* (1860), *Off the Skelligs* (1872), *Fated to be Free* (1874), *Don John*, and *Sarah de Berenger* (1881), and *John Jerome* (1886); and juvenile: *Studies for Stories* (1864), *Poor Matt* (1866), *Stories Told to a Child*, 2 series (1866–72), *A Sister's Bye-Hours* (1868), *Mopsa the Fairy* (1869), and *Little Wonder-Horn* (1872). A beautiful *Jean Ingelow Birthday Book* was issued 1882.

INGEMANN, *ing'ĕh-mân*, Bernhard Severin: 1789,

May 28—1862, Feb. 24; b. in the island of Falster: poet and novelist of Denmark. His literary career may be divided into three periods. The first, 1811–14, embraces his best lyrical productions, viz., the collection of poems entitled *Procne* (1812), and the allegorical epic *De Sorte Riddere* (1814); the second, or dramatic period, ending 1822, was marked by the appearance of numerous tragedies, greatly popular at first, now little regarded. In the third period, Ingemann's writings are characterized either by historical disquisition, or by a strongly religious bias. His epic poem *Valdemar den Store og Hans Mänd* (1824) was the prelude to the various historical novels, in which, taking Sir Walter Scott for his model, he endeavored to portray the social life and habits of his own country in the middle ages. *Valdemar Seier*, the first of the series (1826), and *Erik Menved's Barndom* (1828), are generally regarded as the best of these productions. His poems are based, like his novels, on incidents of Danish national history and tradition. Among his religions works are a collection of anthems and psalms, *Hoejmessepsalmer* (1825); and a rendering of some symbolical or traditionary legends of the church in his *Blade af Jerusalem's Skomager's Lommebog* (1833); *Salomon's Ring* (1839). His best works are his novels. For many years he was very popular; but later a more cultivated criticism has reduced his rank among Danish writers. He had an amazing fecundity; and an endless flow of sentimentality, often tinged with a religious melancholy, which gave his writings instant acceptance in the common mind. Ingemann held the chair of æsthetics and Danish literature at the Royal Acad. of Soröe, near Copenhagen. His collective works have been published in 38 vols., 1857 Copenhagen, and the greater number of his prose works and many of his poems have been translated into various languages.

INGEMINATE, v. *ĭn-jĕm'ĭ-nāt* [L. *ingemĭnātŭs*, redoubled—from *in*, into; *gemĭnō*, I double or increase]: to double or repeat. INGEM'INATING, imp. INGEM'INATED, pp. INGEM'INA'TION, n. repetition; reduplication.

INGENHOUSZ, JAN, Dutch physician and scientist: b. Breda, Holland, 1730; d. Bowood, the seat of the Marquis of Lansdowne, England, 1779, Sept. 7. He studied medicine, and after practising in his own country for several years removed to London in 1767. In 1769 he was appointed aulic councilor and body physician to the Austrian Empress, Maria Theresa, and to Joseph II. After serving for 10 years in that capacity he returned to London, where he began his scientific researches, later becoming a fellow of the Royal Society, and publishing in their *Transactions* several treatises and essays. Among these were *Experiments on Vegetables, Discovering Their Great Power of Purifying the*

*Common Air in Sunshine, but Injuring it in the Shade, or at Night* (1779); *Anfangs-grunde der Electricität* (1781); *Essay on the Food of Plants and the Renovation of Soils* (1796). Dr. Ingenhousz is credited with being the discoverer of the use of carbonic acid for medicinal purposes, and he also invented the plate electrical machine.

INGENIOUS, a. *ĭn-jēn'yŭs* [L. *ingĕnĭōsus*, endowed with genius; *ingĕnĭŭm*, innate or natural quality, capacity: It. *ingenio*, genius: F. *ingénieux*, ingenious]: inventive; skilful or prompt to contrive; clever or curious, as applied to any work or mechanism; witty, acute, or pointed; in *OE.*, mental; intellectual. INGEN'IOUSLY, ad. *-lĭ*. INGEN'IOUSNESS, n., or INGENUITY, n. *ĭn'jĕ-nū'ĭ-tĭ* [F. *ingénuité*]: cleverness or superior power of invention; quickness or acuteness in forming new and unexpected combinations; superior skill.—SYN. of 'ingenious': clever; aptly formed;—of 'ingenuity': skill; inventiveness; cleverness; in *OE.*, wit; invention; acuteness; subtlety; genius.

INGENUE, n. *ânj'nô* [F.: an ingenuous, artless, naïve girl or young woman; one who displays candor or simplicity in circumstances where it is not expected; used often of female parts in plays; also an actress who plays such parts.

INGENUOUS, a. *ĭn-jĕn'ū-ŭs* [L. *ingĕnŭŭs*, frank, natural—from *in*, in, and *gĕnĕrĕ*, old form of *gignĕrĕ*, to beget; It. *ingenuo;* F. *ingénu*, candid, open]: open; frank; candid; free from reserve or dissimulation. INGEN'UOUSLY, ad. *-lĭ*. INGEN'UOUSNESS, n. *-nĕs*, openness of heart; freedom from reserve or dissimulation; frankness.—SYN. of 'ingenuous': fair; open; candid; generous; noble, free-born; unreserved; plain; artless; sincere; hearty; cordial; warm.

IN'GERMANN LAND, or IN'GRIA. See ST. PETERSBURG, GOVERNMENT OF.

INGERSOLL, *ĭng'ghĕr-sol:* town in Oxford co., Ont., Canada; on the Thames river and the Grand Trunk railway; 19 m. e. of London, 85 m. w.s.w. of Toronto. It contains numerous costly public buildings, churches, several grist and saw mills, manufactories of agricultural implements, machinery, castings, woolen goods, cheese, and wooden ware, banks, and newspapers; and has a large export trade in lumber and farm produce. Pop. (1901) 4,573.

ING'ERSOLL, CHARLES JARED: statesman: 1782, Oct. 3—1862, May; b. Philadelphia; son of Jared Ingersoll, who was active in the American revolution, and a member of the convention which adopted the federal constitution. Charles received a liberal education, completed by European travel. In 1801, he produced the tragedy of *Edwy and Elgiva*, and in 1808, a strong political

pamphlet in defense of the democratic policy of Mr. Jefferson, and a satirical review of American politics, entitled *Inchiquin's Letters* (1810). He was elected to congress 1812; and 1814, he advocated the principle that 'free ships make free goods,' in a powerful speech. He was for 14 years U. S. district attorney for Penn., and was in congress 1839–49. He published two series of *Historical Sketches of the War of* 1812, 1845, and 52. A speech in opposition to the Lincoln administration caused his arrest 1862; but it was found advisable to release him, after a brief detention.

INGERSOLL, Ernest, American naturalist: b. Monroe, Mich., 1852, March 13. He studied at Oberlin College and in the Lawrence Scientific School and Museum of Comparative Zoology of Harvard University, where he was a pupil of Agassiz, and in 1874 and 1877 was connected as naturalist with the Hayden survey. He was also an expert on the United States fish commission, and later became known as a popular writer and lecturer on scientific subjects. In 1901 he was lecturer in zoology at the University of Chicago. Among his works are: *Nests and Eggs of North American Birds* (1880–1); *Oyster Industries of the United States* (1881); *Knocking 'Round the Rockies* (1883); *Country Cousins* (1884); *The Crest of the Continent* (1884); *Down East Latch-Strings* (1887); *Wild Neighbors* (1897); *The Book of the Ocean* (1898); *Nature's Calendar* (1900); *Wild Life of Orchard and Field* (1902); *Island in the Air* (1905); *The Life of Animals—the Mammals* (1906); *Eight Secrets* (1906); *The Wit of the Wild* (1906); and also *The Ice Queen,* and several other popular juvenile tales.

INGERSOLL, Jared, American politician: b. Milford, Conn., 1722; d. 1781. Upon the passage of the Stamp Act he was appointed, in 1765, a stamp agent in Connecticut, and accepted the post by the advice of Franklin. This subjected him to the personal abuse and insults from which all colonial stamp agents suffered, and finally he was forced to resign; later, in 1770, becoming an admiralty judge. He wrote and published a pamphlet called *The Stamp Act* (1776).

INGERSOLL, Jared, American lawyer: b. Connecticut 1749; d. Philadelphia, 1822, Oct. 21. Having been graduated at Yale College in 1766, he went to London, was entered of the Middle Temple, and passed five years in the study of law. The American Revolution breaking out while he was still in London, he espoused the cause of the colonies, although the son of a loyalist. He went from London to Paris, where he remained for 18 months, making the acquaintance of Franklin. Returning home, he took up his residence in Philadelphia, where he won almost immediately a prominent position as a lawyer. In 1787 he was chosen one of the repre-

sentatives of Pennsylvania in the convention which framed the United States Constitution. Twice attorney-general of the State, he was United States district attorney for Pennsylvania, and was in 1812 the federal candidate for Vice-President of the United States.

INGERSOLL, Joseph Reed, American lawyer and politician: b. Philadelphia, Pa., 1786, June 14; d. there 1868, Feb. 20. After graduating from Princeton in 1804, he took up the practice of law in Philadelphia. He was a Whig member of Congress from 1835–7, and again from 1842–9. In 1852, President Fillmore appointed him minister to England, a post which he held for only a year. He wrote *Secession a Folly and a Crime*, which appeared just previous to the outbreak of the Civil War; also a *Memoir of Samuel Breck* (1863).

IN'GERSOLL, Robert Green: lawyer: b. Dresden, N. Y., 1833, Aug. 11; d. Dobbs Ferry, N. Y., 1899, July 21. He was a son of a Congl. minister; received a common-school education, removed to Ill. 1843, and began practicing law in Shawneetown 1854. In 1857 he removed to Peoria, 1860 was defeated as a democratic candidate for congress, 1862 was appointed col. of the 11th Ill. cav., was captured by the Confederates near Corinth, Tenn., and shortly after his release resigned his commission and resumed his practice. In 1866 he was appointed attor.gen. of Ill., 1868 was a prominent candidate for the gubernatorial nomination, 1876 nominated James G. Blaine for presidential candidate in the national republican convention in a speech that attracted wide interest by its eloquence, and 1877 declined the proffered office of U. S. minister to Germany. His law practice became very large, but he never accepted a retainer in what he knew to be unjust causes, or where he believed fraud was intended by the applicant. He secured the acquittal of the 'star-route conspirators' 1883, but refused to act as counsel for the Chicago anarchists 1886, and to take part in the prosecution of Stephen J. Field, associate-justice U. S. supreme court, and David Nagle, U. S. deputy marshal for the killing of ex-Judge David S. Terry 1889. He was an eloquent and forcible speaker and writer, a pronounced agnostic, attacking Christianity in severe terms. Socially he was esteemed for benevolence. His publications include *The Gods, and Other Lectures* (Washington 1878); *The Ghosts* (1879); *Some Mistakes of Moses* (1879); *What Shall I do to be Saved? Interviews on Talmage and the Presbyterian Catechism; The 'North American Review' Controversy; Lectures Complete* (1883); *Prose Poems and Selections* (1884); and introductory chapters to Denslow's *Modern Thinkers* (1881) and Beall's *The Brain and the Bible* (1882).

INGEST, v. *ĭn-jĕst'* [L. *ingestus*, poured or thrown into—from *in*, into; *gĕrō*, I bear]: to throw into the

stomach. INGEST'ING, imp. INGEST'ED, pp. INGESTION, n. *ĭn-jĕst'yŭn*, the act of throwing into the stomach. INGESTA, n. plu. *ĭn-jĕs'tă*, things taken in, as food taken into the stomach; opposed to *egesta*.

INGHAM, *ĭng'am*, BENJAMIN, English evangelistic leader: b. Ossett, Yorkshire, 1712, June 11; d. Aberford 1772. He received his education at Batley School and at Queen's College, Oxford, whence he graduated B.A. in 1733. In 1735 he was ordained, and, becoming associated with John Wesley, went with him to Georgia, remaining two years. In 1737 he went with the Wesleys on a visit to the Moravians in Germany, and became so strongly attached to their doctrines that he broke with the Wesleys and founded in Yorkshire several congregations of what were known as 'Moravian Methodists,' but more commonly as 'Inghamites.' He endeavored to unite in this organization the chief doctrines of the Moravians and Methodists, and so successful was he as bishop or general overseer that in a few years there were 84 of these congregations in England. He moved to Aberford about the time of his marriage with a sister of the Earl of Huntingdon in 1741, and succeeded in converting the whole surrounding neighborhood to his faith. In 1759, however, the greater part of his followers deserted him and went over to Sandeman, and in 1760 Ingham himself joined the Sandemanians and the Inghamites disappeared.

INGHAM, CHARLES CROMWELL: 1796–1863, Dec. 10; b. Dublin: painter. He belonged to an artistic family, studied painting in Dublin Acad., took a prize there with his *Death of Cleopatra* 1817, removed to New York the same year, became eminent as a portrait-painter, and was a founder of the National Acad. of Design and the Sketch Club, and vice-pres. of the Acad. 1845–50. Beside portraits of local beauties and national celebrities, his works include *The Laughing Girl; The Flower Girl; The White Plume;* and *Day Dreams.*

INGHAM, SAMUEL DELUCENNA, American politician: b. Bucks County, Pa., 1779, Sept. 16; d. Trenton, N. J., 1860, June 5. He was for some time in the Pennsylvania legislature, and was then sent to Congress, 1813–18, and again 1822–9. In the interim he was appointed prothonotary of the courts of Bucks County, but resigned in 1819 to become secretary to Gov. Finley. On March 6, 1829 President Jackson appointed him secretary of the treasury a position he continued to hold till 1831, Aug. 1.

INGLEBY, *ĭn'gl-bĭ*, CLEMENT MANSFIELD, English author and Shakespearean critic: b. Edgbaston, near Birmingham, 1823, Oct. 29; d. Ilford, Essex, 1886, Sept. 26. After graduating from Trinity College, Cambridge (B.A. 1847; M.A. 1850) he entered into partnership with his father, but in 1859 gave up his law practice and moved

to Ilford, where he began writing for the magazines on scientific and metaphysical subjects. His best known works are his Shakesperean studies, among which are *The Shakespere Fabrications* (1859); *Shakespere Controversy* (1861); *Shakespere's Centurie of Prayse*, etc. (1874); *The Still Lion* (1874; new edition 1875, entitled *Shakespere's Hermeneuties*); *Shakespere: the Man and the Book* (1877–8). He also wrote *Outlines of Theoretical Logic* (1856); *An Introduction to Metaphysics* (1864–9); etc.

INGLIS, *ĭng'lz*, CHARLES, American Anglican bishop: b. New York 1734; d. Halifax, Nova Scotia, 1816. He was ordained priest in England, and in 1765 became assistant minister at Trinity Church, New York. A stout loyalist, he refused to omit from the service the prayer for the king and royal family, and upon the occupation of New York by Washington retired for a time to Long Island. In 1777 he was chosen to the rectorship of Trinity, and in 1783, at the evacuation of New York by the British, went to Halifax in the emigration of the United Empire loyalists. He was consecrated in 1787 bishop of Nova Scotia (with jurisdiction over the other North American provinces), and was the first missionary bishop of the Church of England. He published sermons and pamphlets.

INGLORIOUS, a. *ĭn-glō'rĭ-ŭs* [L. *inglōrĭŭs*, without glory or fame—from *in*, not; *glōrĭă*, glory, renown: F. *inglorieux*]: not bringing honor, glory, or fame; mean; disgraceful. INGLO'RIOUSLY, ad. *-lĭ*. INGLO'RIOUSNESS, n.

INGLUVIES, n. *ĭn-glô'vĭ-ēz* [L. *inglŭvĭēs*, the crop or maw of animals]: the crop or partial dilatation of the œsophagus in birds; the stomach of ruminants. INGLU'VIAL, a. *-vĭ-ăl*, connected with the crop.

INGOLSTADT, *ĭng'ōl-stât*, or INGOLDESTADT, *ĭng'ōl-dė-stât* (anc. *Aureatum*, and by the Latin writers of the 16th c. called *Auripolis* and *Chrysopolis*, the golden city): town and fortress of Upper Bavaria, in a fertile district, on the left bank of the Danube, here crossed by a stone bridge, 46 m. n.n.w. of Munich. It contains three parish churches (two Rom. Cath., one Prot.), a hospital, and a castle. Cloth, playing-cards, and leather are manufactured; and breweries and a trade in corn are carried on. Pop. (1900) 22,207.

Ingolstadt is an ancient, melancholy-looking town, too large for the number of its inhabitants. A university was founded here 1472, which reckoned Reuchlin, Aventin, and other eminent scholars among its professors. It was removed to Landshut 1800, and to Munich about six years later. Ingolstadt was the first German town at which the Jesuits were permitted to establish themselves, and to teach publicly from the university chairs. Loyola gave it the fond title of 'his little Benjamin.' After the suppression of the order 1773, Adam

Weisshaupt established here the order of the Illuminati (q.v.). In 1827, the fortifications of Ingolstadt, destroyed by the French 1800, were restored on a large scale, the two forts on the left bank of the river being especially distinguished for elegance and strength.

INGOT, n. *ĭn'gŏt* [F. *lingot*, an ingot or wedge: Ger. *einguss*, a melting-vessel, an ingot-mold—from Ger. *eingiessen;* Dut. *ingieten*, to pour in]: originally the mold in which the metal was cast; a small mass or bar of unwrought metal—usually said of silver or gold. *Note.*—The F. *lingot* is really derived from the Eng. *ingot*, with the incorporation of the article—thus, F. *lingot=l'ingot*. It is not at all clear whether the first sense of *ingot* as given was the primary signification. We have AS. *in*, in, and *gotcn*, poured—from *geótan*, to pour, to fuse metals: comp. *yetlin*, cast metal, a boiler; *yetling*, an iron pot, a gridiron, which are provincial terms in Scotland: comp. also Sp. *lingote*, an ingot; mid. L. *lingōtus*, a small mass of silver or gold of the size and length of a tongue, and treated as if from L. *lingua*, a tongue, the meaning, according to this latter, being simply 'a tongue of precious metal.'

INGRAFT, v. *ĭn-grăft'* [*in*, into, and *graft*]: to insert a prepared part of one tree into another for propagation; to plant or introduce something foreign; to set or fix deeply. INGRAFT'ING, imp. INGRAFT'ED, pp. INGRAFT'MENT, n. the act of ingrafting; the thing ingrafted.—SYN. of 'ingraft': to implant; insert; propagate; introduce; set; fix.

INGRAHAM, *ĭng'gra-am*, JOSEPH HOLT: 1809–1860, Dec.; b. Portland, Me.: Prot. Episc. clergyman. He went to sea as a common sailor at an early age; engaged in mercantile business and took a collegiate course on his return; became prof. of languages in Jefferson College, Miss.; published *The Southwest, by a Yankee; Lafitte, or the Pirate of the Gulf; Burton, or the Sieges; Captain Kyd, The Dancing Feather*, and other popular romances (1836–54); took orders in the Prot. Episc. Church 1855; became rector of a parish and of St. Thomas's Hall for Boys at Holly Springs, Miss.; and published *The Prince of the House of David* (1855), *The Pillar of Fire* (1859), and *The Throne of David* (1860).

INGRAHAM, PRENTISS, American soldier and author: b. Adams County, Miss., 1843, Dec. 22; d. 1904. He was educated at Jefferson College (Miss.), also studied medicine at the Mobile Medical College, entered the army of the Confederate States in 1861, fought later with Juarez in Mexico, with the Austrian army in the war with Prussia, and in the ten-years' war for independence in Cuba. Subsequently he entered a literary career, and published a great quantity of fiction, including: *Without Heart* (1878); *Zuleikah* (1887); *Red Rovers on Blue Waters* (1890); *The Vagabond* (1891); and *The Wandering Jew of the Sea* (1891).

INGRAIN, v. *ĭn-grān'* [*in*, into, and *grain:* F. *en graine*, in grain—from Sp. or It. *grana*, seed, cochineal]: to impregnate or fix deeply; to dye in the raw material, or before it is manufactured. INGRAIN'ING, imp. INGRAINED', pp. *-grānd':* ADJ. thoroughly impregnated; dyed in the raw material, or before manufacture. ROGUE-INGRAIN, a thorough rogue; one dyed as it were in the grain.

IN'GRAM, JOHN KELLS, English educator and author: b. County Donegal, Ireland, 1823, July 7; d. Dublin, 1907, May 1. He was educated at Trinity College, Dublin, and was appointed professor of oratory and English literature there in 1852, Regius professor of Greek in 1866, and librarian in 1879. At one time he was vice-provost of the college, and also held the presidency of the Royal Irish Academy. His *History of Political Economy*, originally printed in the 9th edition of the *Encyclopædia Britannica*, was separately published in 1888 and widely translated. He further wrote: *A History of Slavery and Serfdom* (1895); *Sonnets and other Poems* (1900); *Human Nature and Morals according to Auguste Comte* (1901), and other works.

INGRATE, a. *ĭn'grāt* [F. *ingrat*, ungrateful—from L. *ingrātus*, unthankful, ungrateful]: ungrateful; unthankful; N. one who is ungrateful for favors received; an ungrateful person.

INGRATIATE, v. *ĭn-grā'shĭ-āt* [L. *in*, into; *grātĭă*, favor: It. *ingraziare*, to gain the good-will or favor of]: to secure the good-will or favor of another; to commend one's self to the favor or confidence of another. INGRA'TIATING, imp. INGRA'TIATED, pp.

INGRATITUDE, n. *ĭn-grăt'ĭ-tūd* [*in*, not, and *gratitude:* F. *ingratitude;* It. *ingratitudine*, ingratitude—from L. *ingrātŭs*, unthankful]: the return of evil for good; unthankfulness.

INGREDIENT, n. *ĭn-grē'dĭ-ĕnt* [F. *ingrédient*—from L. *ingrĕdĭĕntem*, going or entering into—from *in*, into; *grădĭŏr*, I go]: that which enters into a compound or mixture; a component part.

INGRES, *ănggr*, JEAN DOMENIQUE AUGUSTE: 1781, Sep. 15—1867, Jan. 14; b. Montauban: eminent painter of the French school. From early boyhood he desired to become a painter: he forthwith began to study drawing; and after having been successively the pupil of a M. Roques and of M. Briant, landscape-painter, he went to Paris in his 17th year, and entered the studio of the great painter David. He remained with David as a pupil for four years. He gained the second prize for painting at the Academy of the Fine Arts 1800; and in the following year, he took the first. The picture which gained this high distinction was *The Arrival of the Intercessors at the Tent of Achilles*—now at the

School of Fine Arts. In 1802, he exhibited two portraits, which still rank among his finest works of this class; 1804, he exhibited a portrait of the First Consul, also a portrait of himself. He again painted Napoleon, then emperor, 1806, and the picture was bought for the Hôpital des Invalides. In 1806, he went to Rome, where he lived for many years. At Florence, where he resided 1820–24, he painted a picture which gained him a party of enthusiastic admirers among the Parisians. The picture was *Le Vœu de Louis XIII.* It was exhibited at the Louvre 1824, and gained for him the chief place among French idealist painters of that time. He received from Louis XVIII. the cross of the Legion of Honor; and was appointed to succeed Baron Denon as professor at the Academy of the Fine Arts. He brought on himself a tempest of discussion 1827 by *L'Apothéose d'Homère,* which his admirers declared a masterpiece; while his detractors condemned it as bad in drawing, poor in coloring, and ungraceful, coarse, and even vulgar in conception. The discussion which it originated and the bitter expressions of some of his critics made such an impression upon Ingres, that from 1832–34 he exhibited nothing but two portraits, and in the latter year again established himself in Italy. He became director of the French Academy at Rome, a post which has been held by many distinguished artists, and in which his predecessor was Horace Vernet. This time he remained in Italy about ten years. During these years, he sent many pictures to be exhibited at Paris; these gradually wrought upon the public taste; and when he returned, he found his country-men enthusiastic in admiration of his latest composition—*Cherubini* [*the composer*] *Inspired by the Muse.* He was made an officer of the Legion of Honor 1841, a commander 1845, and grand officer 1855; he was named a senator 1862, May 25; and soon afterward was appointed a member of the imperial council of public instruction. He became a member of the Institute 1825. Many of his works are now in public collections. At the Paris Exhibition 1855, a room was set apart for his pictures, and one of two grand medals of honor was awarded to him — Eugene Delacroix getting the other. He continued to exercise his art almost to the close of his life. The Naiad, 1861 (*La Source*), his solitary contribution to the London Exhibition 1862, is considered the finest of his later works. *L'Apothéose d'Homère, Le Martyre de St. Symphonea, La Naissance de Venus Anadyomêne, La Souree, L'Odalisque,* and the portrait of M. Bertin, aîné, are among the most characteristic.

INGRESS, n. *ĭn'grĕs* [L. *ingressus,* an entering or a going into—from *in,* into; *grădĭŏr,* I go]: entrance; power, right, or means of entrance. INGRESSION, n. *ĭn-grĕsh'ŭn,* the act of entering.

IN'GRIA. See St. PETERSBURG, GOVERNMENT OF.

INGUINAL, a. *ĭng'gwĭn-ăl* [L. *inguĭnālis*—from *inguen*, the groin]: pertaining to the groin.

INGULF, v. *ĭn-gŭlf* [*in*, into, and *gulf*]: to swallow up wholly, as in a gulf or depth; to cast into a gulf. INGULF'ING, imp. INGULFED', pp. *-gŭlft'*. INGULF'MENT, n. the swallowing up in a gulf or abyss.

INGULPH'US, or INGULF, *ĭn'gŭlf:* abbot of Croyland: long considered the author of the *Historia Monasterii Croylandensis* (History of the Monastery of Croyland or Crowland, in Lincolnshire): supposed to have been born in London about 1030; d. Croyland, 1109, Dec. 16. According to the account of his life in his History, he studied oratory and philosophy at Oxford; became a favorite of Edgitha, wife of Edward the Confessor; visited Duke William of Normandy at his own court in 1051; and, after a disastrous pilgrimage to the Holy Land, entered a Norman monastery. Here he remained till 1076, when he was invited to England by the Conqueror, and made Abbot of Croyland. The *Historia Monasterii Croylandensis* was printed by Savile, London, 1596; more complete ed. by Gale, Oxford 1684. It has been translated into English for Bohn's Antiquarian Library. Some writers even of the last century questioned the entire genuineness of the book; but Sir Francis Palgrave, in the *Quarterly Review*, 1826, is generally considered to have proved that the whole so-called History was little better than a novel, probably the composition of a monk in the 13th or 14th century.

INGURGITATE, v. *ĭn-gĕr'jĭ-tāt* [L. *ingurgĭtātus*, swallowed up or gulfed in—from *in*, in; *gurgĕs*, a whirlpool: It. *ingurgitare*]: to swallow greedily or in great quantity. INGUR'GITATING, imp. INGUR'GITATED, pp. INGUR'GITA'TION, n. *-tā'shŭn*, the act of swallowing in great quantity.

INHABIT, v. *ĭn-hăb'ĭt* [L. *inhăbĭtārĕ*, to dwell in, to inhabit—from *in*, into; *habĭtō*, I dwell: F. *inhabiter*, to inhabit]: to occupy as a place of settled residence; to live or abide. INHAB'ITING, imp. INHAB'ITED, pp.: ADJ. occupied, as by persons or animals. INHAB'ITABLE, a. *-tă bl*, that may be dwelt in; but in *OE.*, not habitable; unhabitable. INHAB'ITANT, n. *-ĭ-tănt*, one who dwells or resides in a place. INHAB'ITER, n. *-tĕr*, an inhabitant. INHAB'ITA'TION, n. *-tā'shŭn*, in *OE.*, a place of dwelling; an abode; state of being inhabited. INHAB'ITANCE, n. *-ans*, the quality or state of being an inhabitant. INHAB'ITATIVENESS, n. *-tĭv-nĕs*, in *phren.*, the organ which is said to prompt men to inhabit particular spots in preference to others, thus imbuing them with love of home.

INHALA'TION, in Medicine: method of introducing into the system various anesthetic and curative agents; employed first for administering anesthetics to prevent

the pain of surgical operations; and afterward for giving various volatile drugs for relief in catarrh, hay-fever, asthma, bronchitis, and some forms of pulmonary diseases. Chloroform and ether were formerly administered by means of a metal or paper horn with the open end large enough to cover the mouth and nose; a piece of sponge saturated with the agent was placed in the horn, which was then held over the mouth and nose until the patient became unconscious. A folded towel similarly moistened and laid over the mouth and nose was likewise employed by some. At present greater safety is insured by the use of special apparatus whereby the admixture of atmospheric air with the vapor of the anesthetic is effected. The simpler inhalants that may be used at home without a physician's aid, may be prepared in general by placing the material from which the gas or vapor is to be obtained in a bowl, jug, or other convenient receptacle, and either pouring boiling water on it or placing the vessel on a stove or over a spirit lamp. As soon as the gas or vapor arises, the head, with mouth open, should be held over the vessel that the vapor may be inhaled by both mouth and nose. Covering the head and the vessel with a shawl facilitates the speedy action of the agent used.

INHALE, v. *ĭn-hāl′* [L. *inhālārĕ*, to breathe at or upon—from *in*, in or on; *hālō*, I breathe]: to draw into the lungs, as air; to inspire. INHA′LING, imp. INHALED′, pp. *-hāld′*. INHA′LER, n. *-lėr*, one who or that which. INHA′LABLE, a. *-lă-bl*, that may be drawn into the lungs. IN′HALA′TION, n. *shŭn*, the drawing into the lungs of air, fumes or vapor; that which is inhaled. INHALENT, a. *ĭn-hā′lĕnt*, used for inhaling. INHA′LANT, n. *-lănt*, an instrument from which any vapor may be inhaled.

INHARMONIC, a. *ĭn′hâr-mŏn′ĭk*, or IN′HARMON′ICAL, a. *-ĭ-kăl* [*in*, not, and *harmonic*]: discordant; not musical. IN′HARMO′NIOUS, a. *-mō′nĭ-ŭs* [*in*, not, and *harmonius*]: discordant; unmusical. IN′HARMON′IOUSLY, ad. *-lĭ*. INHAR′MONY, n. *-nĭ*, discord.

INHAUL, n. *ĭn′hawl*, or INHAULER, n. *-ėr:* in *naut.*, a rope or purchase for rigging-in the jib-boom, studding-sail-boom, or other spar.

INHERE, v. *ĭn-hēr′* [L. *inhærērĕ*, to remain firm or fast in—from *in*, into; *hærĕō*, I stick]: to exist or be fixed in something else; to belong, as attributes or qualities. INHE′RING, imp. INHERED′, pp. *-hērd′*. INHESION, n. *ĭn-hē′zhŭn* [L. *inhæsus*, remained firm in]: the state of being fixed in something else. INHERENT, a. *ĭn-hē′rĕnt* [F. *inherent*—from L. *inhæren′tem*]: naturally pertaining to; innate; natural. INHE′RENTLY, ad. *-lĭ*. INHE′RENCE, n. *-rĕns* [F.—L.], or INHE′RENCY, n. *-rĕn-sĭ*, existence in something else, so as to be inseparable from it.—SYN. of 'inherent': inborn; native; inbred; inwrought.

INHERIT, v. *ĭn-hĕr′ĭt* [Norm. F. *enheriter*, to inherit

—from L. *in*, in or on, *hærĕs*, an heir: F. *hériter*, to inherit—from mid. L. *hereditārĕ*]: to possess by descent from an ancestor; to receive by nature from a progenitor, as a disease or quality; to enjoy. INHER'ITING, imp. INHER'ITED, pp.: ADJ. received by right or descent; possessed. INHER'ITOR, n. *-ĭ-tĕr*, one who inherits. INHER'ITRIX, n. fem. *-ĭ-trĭks* or INHER'ITRESS, n. fem. *-trĕs*, a female who inherits or is entitled to inherit. INHER'ITABLE, a. *-tă-bl*, that may be transmitted from the parent to the child. INHER'ITABLY, ad. *-tă-blĭ*, by inheritance. INHER'ITABIL'ITY, n. *-bĭl'ĭ-tĭ*, the quality of being inheritable. INHER'ITANCE, n. *-ĭ-tĕns*, possessions which may descend to an heir; reception of possession; hereditary estate: see HEIRS; INTESTACY; WILL; SUCCESSION.

INHER'ITANCE, in Law: a perpetual or continuing right to an estate invested in a person and his heirs. There are nine 'canons of inheritance'; three may be quoted: (1) That inheritance shall, in the first place, descend to the issue of the last purchaser in *infinitum;* (2) That the male issue shall be admitted before the female; (3) That where two or more of the male sex are in equal degree of consanguinity to the purchaser, the eldest only shall inherit, but the females all together.

INHERITANCE TAX: an assessment laid upon those made heirs of property, either by distribution or descent. Sometimes this assessment is confined to collateral heirs, when it is called collateral inheritance tax. The raising of public funds in this way has been sanctioned by legislation from the beginning of Roman law, and in England and other countries is a large and steady source of revenue, although such taxes have been stigmatized by certain economists as 'death duties.' During the Civil War taxes of this kind were made part of the internal revenue system of the United States, but abolished soon after the struggle ended. The rate and method of assessment vary in different countries, and in different States of the Union. The English inheritance tax ranges from a 1 to a 10 per cent assessment, in accordance with the amount of the inheritance and the degree of relationship of heirs. In the United States lineal, collateral and succession inheritance taxes have been instituted in several States, as a source of domestic revenue. In Connecticut the assessment on inherited property is 5 per cent on all sums and values above $1,000. In Delaware the assessment ranges from 1 to 5 per cent, according to the amount of property left, and the degree of relationship. In Illinois, 1 per cent on values over $20,000 to lineal descendants; 2 per cent to 5 per cent on all amounts to collateral relations. In Maryland, 2½ per cent on all legacies and successions. In New York, 1 per cent on all property over the amount of $10,000 to lineal heirs, 5 per cent on all amounts over $500 to collateral relatives. In Ohio, 5 per cent on all values over $500. In Vir-

ginia, 5 per cent in every case. Several States leave untaxed the property descending or distributed to the lineal descendants, and place assessments of varying percentage on the amount or value of the legacy which falls to collateral heirs. These are California, Maine, Massachusetts, Minnesota, New Jersey, Tennessee, West Virginia. Inheritance laws have in the United States occasioned much discussion and litigation, but their justice and utility have been testified to by experience and the decision of the law courts. The economists of the present and other periods have seen the scientific propriety of such legal provisions, and have noted the uniformity with which they deal with all classes of the financial community.

INHESION. See under INHERE.

INHIBIT, v. *ĭn-hĭb'ĭt* [L. *inhĭbĭtus*, kept back, restrained—from *in*, not; *hăbĕō*, I have or hold]: to restrain; to hinder; to check or repress; to forbid. INHIB'ITING, imp. INHIB'ITED, pp. INHIB'ITER, n. *-ėr*, one who. INHIBITION, n. *ĭn'hĭ-bĭsh'ŭn* [F.—L.]: restraint; a writ from a higher to a lower court to stay proceedings; in *Scot.*, a process in law which restrains a wife from burdening her husband with debts: also, writ issued to prohibit a person from alienating his heritable estate until the debt of the creditor is paid.—For Inhibition in *physiol.*, see NERVOUS SYSTEM. INHIB'ITORY, a. *-tėr-ĭ*, having the nature or power of an inhibition.

INHIBITION, in Psychology: the prevention of, or interference with one activity or process by another. In the mind the main line of thought keeps out, inhibits, distracting or conflicting ideas. The direction of attention determines what ideas are not allowed to stay in consciousness. The ultimate explanation of this fact depends upon what general theory of psycho-physical action is held. A common motor theory is that the rival tendencies to use the same motor channel are settled by the strongest impulse shutting out the others. This interference with one process by another is a general characteristic of neural activity. The action of higher nerve centres normally inhibits conflicting action of the lower centres. The automatic activity of turning in at one's own gate, for example, may be inhibited by the brain activity accompanying the thought of calling on a neighbor.

INHOSPITABLE, a. *ĭn-hŏs'pĭ-tă-bl* [OF. *inhospitable*—from L. *in*, not; *hospĕs*, or *hospĭtem*, a guest: *in*, not, and Eng. *hospitable*]: not disposed to entertain friends or strangers; affording no means for subsistence or shelter, as a rugged desert country. INHOS'PITAL'ITY, n. *-tăl'ĭ-tĭ* [F. *inhospitalité*]: want of kindness to others; unwillingness or refusal to entertain. INHOS'PITABLY, ad. *-blĭ*.

INHUMAN, a. *ĭn-hū′măn*, or IN′HUMANE′, n. *-mān′* [*in*, not, and *human:* L. *inhūmānŭs*, savage—from *in*, not; *hūmānus*, human: F. *inhumain*, inhuman]: cruel; destitute of the kindlier qualities of human nature; pitiless. INHU′MANLY, ad. *-lĭ*. IN′HUMAN′ITY, n. *-măn′ĭ-tĭ* [F. *inhumanité*]: cruelty in disposition; cruelty in act; barbarity.—SYN. of 'inhuman': barbarous; savage; unfeeling; brutal; merciless.

INHUME, v. *ĭn-hūm′* [F. *inhumer*—from L. *inhŭmārĕ*, to bury in the ground—from *in*, in; *hŭmō*, I bury—from *hŭmŭs*, the earth]: to bury; to inter; to deposit in the earth, as a dead body. INHU′MING, imp. INHUMED′, pp. *-hūmd′*. INHUMATION, n. *ĭn′hū-mā′shŭn* [F.—L.]: the act of burying; interment; a method of digesting a substance by burying the vessel containing it in dung or warm earth.

INIA, *ĭn′ĭ-a* (*Inia Boliviensis*): cetaceous animal, of family *Delphinidæ*, in form resembling a dolphin, with a long and slender snout. It is the only known species of its genus, and is one of the few cetacea which inhabit fresh water. It is found in some of the upper tributaries of the Amazon, and in the lakes near the Cordilleras. It is from 7 to 12 or 14 ft. long. The Inia feeds chiefly on fish. It is pursued for the sake of its oil. It is found usually in little troups of three or four. The females show great affection for their young.

INIMICAL, a. *ĭn-ĭm′ĭ-kăl* [mid. L. *inimicālis—from L. inĭmīcus*, unfriendly—from *in*, not; *amīcus*, a friend]: hostile; unfriendly; adverse. INIM′ICALLY, ad. *-lĭ*.

INIMITABLE, a. *ĭn-ĭm′ĭ-tă-bl* [F. *inimitable*—from L. *ĭnĭmĭtābĭlĭs*, that cannot be imitated—from *in*, not; *imĭtor*, I imitate]: that cannot be imitated or copied. INIM′ITABLY, ad. *-blĭ*. INIM′ITABIL′ITY, n. *-bĭl′ĭ-tĭ*, incapability of being imitated or copied.

INIQUITOUS, a. *ĭn-ĭk′wĭ-tŭs* [F. *iniquité*—from L. *iniquĭtātem*, unevenness; injustice—from *in*, not; *æquus*, even, equal: It. *iniquita*, iniquity]: characterized by injustice; very unjust; wicked. INIQ′UITOUSLY, ad. *-tŭs-lĭ*. INIQ′UITY, n. *-wĭ-tĭ*, injustice; wickedness; marked departure from justice.—SYN. of 'iniquitous': nefarious; unjust; criminal; unrighteous;—of 'iniquity': crime; vice; sin; offense; trespass; transgression; wrong; misdeed; unrighteousness.

INITIAL, a. *ĭn-ĭsh′ăl* [F. *initial*—from mid. L. *initĭālis*—from L. *inĭtĭŭm*, beginning, an entrance—from *in*, into: *ĭtus*, gone: It. *iniziale*]: beginning; placed or being at the beginning: N. that which begins; the first letter of a word or proper name. INITIALS, n. plu. *ĭn-ĭsh′ălz*, the first or capital letters of a name and surname; in many cases, equally binding with the full name, especially in mercantile documents; though the regular signature in all legal deeds and writings is by full name and surname.

INI'TIATE, v. *-ĭsh'ĭ-āt* [F. *initier*—from L. *inĭtĭārĕ*, to initiate; *inĭtĭātŭs*, initiated]: to instruct in rudiments or principles; to give an entrance into any society or sect; to perform the first act or rite. INI'TIATING, imp. INI'TIATED, pp. a. instructed in the first principles; entered. INI'TIATIVE, a. *-ă-tĭv* [F.—L.]: serving to introduce: N. the introductory step; power of beginning. INI'TIA'TION, n. *-ā'shŭn* [F.—L.]: the act or process of introducing; formal admission. INI'TIATORY, a. *-tĕr-ĭ*, serving to introduce; introductory. INITIATE, a. in *OE.*, newly admitted; fresh and unpracticed like a novice.

INJECT, v. *ĭn-jĕkt'* [F. *injecter*, to inject—from L. *injectārĕ*, to throw or cast in or into—from *in*, into; *jăcĕrĕ*, to throw]: to throw or cast in; in *anat.*, to fill the vessels of a dead animal with coloring matter to facilitate dissection. INJECT'ING, imp. INJECT'ED, pp. a. thrown in. INJECTION, n. *ĭn-jĕk'shŭn* [F.—L.]: in *med.*, the act of throwing a liquid in by a syringe; the liquid substance thus thrown into a body: such fluids injected into the rectum or lower bowel, are termed clysters (q.v.). See ENDERMIC; HYPODERMIC INJECTION; TRANSFUSION OF BLOOD. INJECTION-PIPE, the pipe through which cold water passes to the condenser of an engine: see INJECTOR, GIFFARD'S.

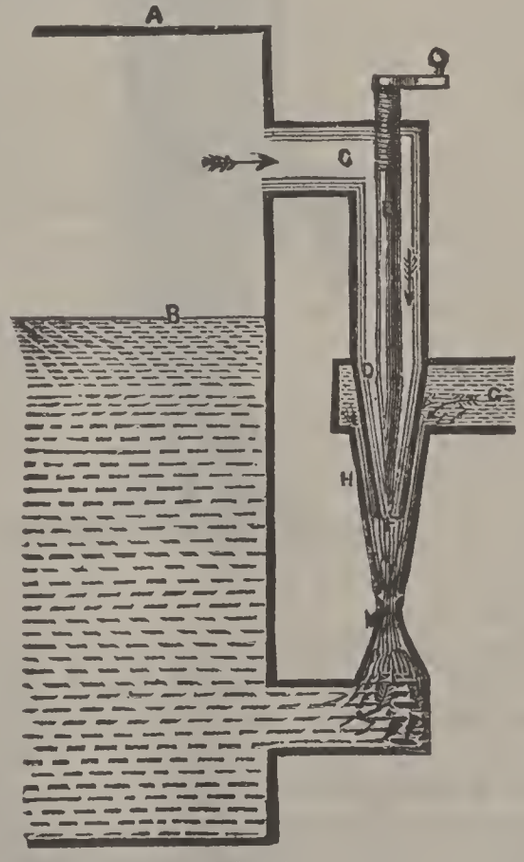


Fig. 1.

INJECTOR, GIFFARD'S: invention now much used for feeding water into steam-boilers, particularly locomotive boilers. Feed-pumps are difficult to keep in order when

driven at high speed. The very rapid action of the valves severely tries their durability. In locomotives, inconvenience was often occasioned by the fact, that their feed-pumps acted only when they were running; and thus, if an engine happened to stand still for a considerable time, the water occasionally became too low in the boiler. The injector acts equally well whether the engine is running or at rest.

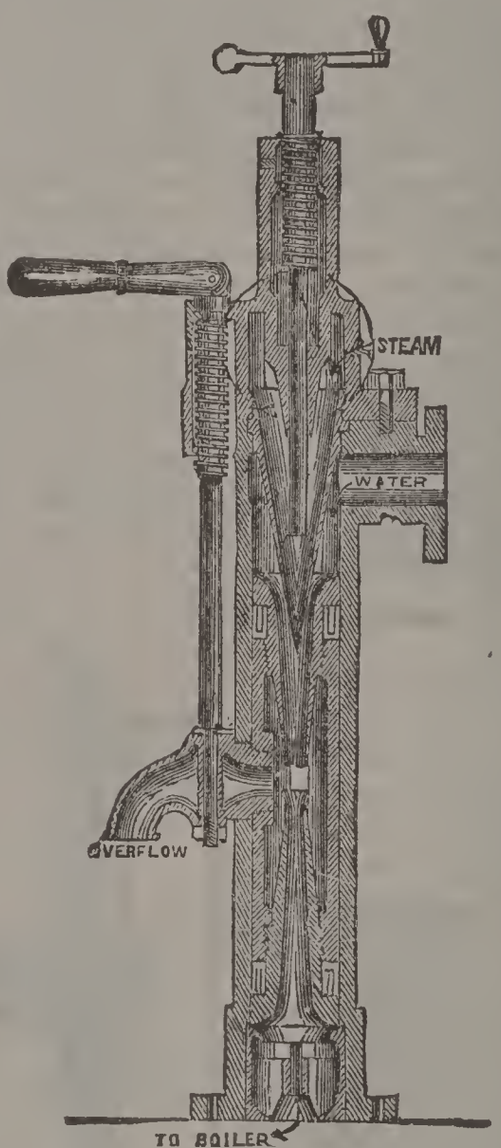


Fig. 2.

The diagram Fig. 1 gives an idea of the essential parts. A is the steam-boiler, B being the water-level, CDF a pipe into which steam is admitted: this pipe terminates in a cone DF, inclosed in a larger cone H. In the cone DF, the pointed plug E can be raised or lowered to increase or diminish the area of the aperture at its lower end F. G is a pipe communicating with the water-cistern, and admitting water into the external cone H. K is a pipe communicating with the boiler under the water-level. On opening communications between the boiler and this apparatus, it might be expected

that steam would rush out at F, and water at K, both currents meeting with great force, and escaping into the atmosphere between the two openings. Paradoxical as it may appear, the outflowing stream of water at K, though it is actually flowing under a greater pressure than the current of steam escaping at F, due to the *head* of water arising from the difference of level between the aperture at K and the water-level at B, is overpowered, and driven back into the boiler; and not only is the outflowing current of steam at F able to drive back the stream of water trying to escape at K, but the torrent of steam drags with it a large quantity of water with which it comes into contact as it is passing through the cone HH. This water finds its way into the cone HH, through the pipe G, from the tender or cistern, and constitutes the feed-water. The steam rushing from the aperture at F will necessarily be condensed by the cold water with which it comes into contact in the cone HH. The explanation offered of the action of this apparatus is as follows: The opening at F, through which the steam escapes, has nearly twice the area of the opening into which the water is to be forced at K. The opening in the cone HH is also larger than the aperture at K, and it appears that the mechanical power contained in the flow of steam from F is, as it were, transformed from a large area to a smaller, with a corresponding increase in its intensity. This diminution of its volume arises from its condensation by the cold water through which it has to rush in the cone HH. We get thus the mechanical power due to a column of large area concentrated into a small area, with a corresponding increase in its velocity, and to this increase of velocity is due the fact, that a current issuing at FH will enter at K, in spite of the counter-pressure at K. The injector for feeding boilers is an expensive apparatus, in consequence of the number of adjustable parts required. Variations in the pressure of steam require alterations in the area of the steam-passage, and in the distances between the mouths of the conical openings for the outflow and inflow of steam and water.

Fig. 3.

Fig. 2 shows in section an injector such as is now in common use.

Fig. 3 shows in section a simple form of injector for raising water. Steam issuing from the pipe S, into the vessel WR, will draw the water through the pipe T, and force it up through the narrow neck below R, to a height of about one ft. for every pound of pressure per sq. inch. It is doubtful if those injectors can work so economically, as regards expenditure of steam, as ordinary slow-moving

pumps; but they possess many conveniences and advantages, which are bringing them into use.

INJUDICIAL, a. *ĭn'jû-dĭsh'ăl* [*in*, not, and *judicial*]: not according to the forms of law.

INJUDICIOUS, a. *ĭn'jû-dĭsh'ŭs* [*in*, not, and *judicious*]: acting without judgment; unwise; indiscreet. IN'JUDI'CIOUSLY, ad. *-lĭ*, with ill judgment; not wisely. IN'JUDI'CIOUSNESS, n. want of discretion or sound judgment. —SYN. of 'injudicious': imprudent; hasty; inconsiderate; incautious; rash.

INJUNCTION, n. *ĭn-jŭngk'shŭn* [F. *injonction*—from mid. L. *injunctĭōnem*—from L. *injunctus*, laid or imposed upon—from *in*, into; *jungo*, I join]: the act of enjoining, commanding, or ordering; a command, order, or precept; urgent advice. INJUNCTION, in *law*, prohibitory or mandatory writ issued by a court of equity, commanding a person or persons not to do a contemplated thing, or to desist from continuing an action in progress; or commanding him or them to do a certain thing or continue an action already begun. Where a party feels aggrieved by the action (proposed or in progress) of another, he may obtain a preliminary or temporary injunction commanding a cessation of all action pending a judicial determination of the equity in the case; and if the decision be favorable he may also obtain a permanent injunction, forbidding the execution of the thing contemplated or begun by the party so enjoined. The restraint by injunction may be applied to state and municipal govts., and railroad and other corporations, as well as individuals. A person may obtain an injunction to prevent a steamboat landing at his property, or a railroad corporation extending its road-bed across his property prior to legal condemnation or satisfactory compensation; and a state or city may be restrained similarly from creating or maintaining a nuisance, beginning or completing a thing that will infringe on the rights of an individual or other persons, or permitting the continuance of illegal acts by any official. In cases of individuals, an injunction may be used to prevent personal loss or other damage either threatened or in progress, and in a great variety of cases where one individual believes himself liable to injury by the action of another. The violation of an injunction is punishable by the issuing authority as a contempt of court on application of the party obtaining the writ.

INJURE, v. *ĭn'jûr* [F. *injure*, an injury; *injurier*, to insult—from L. *injūrĭă*, a thing done contrary to justice —from *in*, not; *jus*, that which is right, law, *jūris*, of law]: to do a wrong to; to hurt or wound; to damage or impair; to lessen the value of. INJURIA, n. *ĭn-jūr'ĭ-a* [L.]: in *law*, a legal wrong, that is, an act or omission of which the law takes cognizance as a wrong. IN'JURING, imp. IN'JURED, pp. *-jûrd*. IN'JURER, n. *-jûr-ẽr*,

one who. INJURIOUS, a. *ĭn-jô′rĭ-ŭs* [F. *injurieux*]: unjust; hurtful to the person, property, or to rights, feelings, etc.; pernicious; baneful. INJU′RIOUSLY, ad. *-lĭ.* INJU′RIOUSNESS, n. *-nĕs.* INJURY, n. *ĭn′jû-rĭ,* wrong or damage done to a person, property, rights, interests, etc., of any one; that which brings harm or occasions loss; mischief.—SYN. of 'injury': to impair; hurt; harm; damage; wound; tarnish; slander; diminish; grieve; annoy; —of 'injurious': wrongful; hurtful; unjust; prejudicial; harmful; detrimental; deleterious; noxious.

INJURIA ABSQUE DAMNO, in Law: a term used to imply that the wrong incurred was without damage or loss, in which the action at law cannot be maintained.

INJUSTICE, n. *ĭn-jŭs′tĭs* [F. *injustice*—from L. *injustĭtĭă,* unjust proceeding—from *in,* not; *justus,* just]: iniquity; wrong; any violation of the rights or due of another; unfairness in word or deed.

INK, n. *ĭngk* [OF. *enque,* ink—from Gr. *engkauston;* L. *encaustum,* the purple ink used in the signature of the emperor: It. *inchiostro;* F. *encre;* Dut. *inkt,* ink]: a fluid used in writing, printing, etc.: V. to daub or black with ink. INK′ING, imp. INKED, pp. *ĭngkt.* INKY, a. *ĭngk′ĭ,* of or like ink. INK′INESS, n. the quality of being inky. INKSTAND, n. a vessel for holding ink. INK-BAG, the bag containing a deep black liquid found in the cuttle fish. INKHORN, n. *ink,* and AS. *ærn,* a secret place]: a portable case for the instruments of writing; an ink-holder. INKING-ROLLER, a roller made of a certain composition used by printers for spreading the ink equally over the type. INKING-TABLE, the table or slab covered with ink on which the inking-roller is turned to receive the requisite quantity of ink.

INK: fluid used in writing, printing, etc. The most important kinds are described below, under the heads *Writing-Ink* and *Printing-Ink.* For *China Ink,* see INDIA INK. *Copying-Ink* is ink which yields a fair copy of matter written with it, upon pressing damped tissue-paper against the paper on which the writing in copying-ink was originally made. Any writing-ink soluble in water will serve the purpose, if there is added to it some substance which will retard the oxidizing process till the copying has been done: gum-arabic, with glycerine, dextrine, or sugar may be used for this purpose. *Marking-Ink,* used for writing on linen cloth, depends for its durability on some salt of silver, usually the nitrate dissolved in water and ammonia. There is also some other coloring matter to cause it to show black while being used, and a little gum for thickening.

1. *Writing-Ink.*—The essentials of ordinary black ink are galls, sulphate of iron (known as green vitriol or green copperas), and gum; and the most important point is the regulation of the proportion of the sulphate of iron to the galls. If the former is in excess, the ink,

though black at first, soon becomes brown and yellow. The gum is added to retain the coloring matter in suspension, and to prevent the mixture from being too fluid. The following prescription by Prof. Brande yields a very good ink: 'Boil six ounces of finely bruised Aleppo galls in six pints of water, then add four ounces of clean and well crystallized sulphate of iron, and four ounces of gum-arabic. Keep the whole in a wooden or glass vessel, occasionally shaken. In two months, strain, and pour off the ink into glass bottles.' The addition of a little creosote is useful as a check to the formation of mold. Stephens's ink—a blue liquid, which in a few hours after its deposition on paper becomes of an intense black—is one of the most popular writing fluids: it consists essentially of gallotannate of iron, *dissolved* in sulphate of indigo, while in ordinary ink the coloring matter is merely *suspended* by means of the gum. Runge, a German chemist, has discovered a simple and cheap black writing fluid, prepared from chromate of potash and a solution of logwood, which possesses the properties of forming no deposit, of adhering strongly to the paper, of being unaffected by exposure to water or acids, and of neither acting on nor being acted on by steel pens. Unfortunately, exposure to the air has been found to decompose it, separating its coloring matter. It has been suggested that soda might operate as a corrective for this.

Various recipes for *indelible* inks have at different times been published. Dr. Normandy asserts that the ink obtained by the following combination cannot be obliterated or defaced by any known chemical agent: 6 lbs. of Frankfurt black (supposed to be a charcoal obtained from grape and vine lees, peach-kernels, and bone-shavings) must be ground with mucilage, formed by adding 5 lbs. of gum-arabic to 15 gallons of water, and the mixture strained through coarse flannel; 1 lb. of oxalic acid is then added, with as much decoction of cochineal or sulphate of indigo as will give the required shade.

*Red Inks* are of two kinds, one variety consisting essentially of the tinctorial matter of Brazil-wood, and the other prepared from cochineal or carmine. Stephens's red ink, one of the best of these preparations, is obtained as follows: 'Add to a quantity of common carbonate of potash, soda, or ammonia, twice its weight of crude argol in powder. When the effervescence has ceased, decant or filter the solution from the insoluble matter. To this fluid add by measure half its quantity of oxalate of alumina, prepared by dissolving damp, newly precipitated alumina in as small a quantity as possible of a concentrated solution of oxalic acid. The mixture thus prepared is next colored, when cold, with bruised or powdered cochineal, and after standing for 48 hours is strained when it is fit for use.' (Muspratt's *Chemistry*, II, 378).

*Blue Inks* are now made either directly or indirectly from Prussian blue. Stephens's unchangeable blue ink is formed by dissolving this salt (first well washed in a dilute mineral acid) in an aqueous solution of oxalic acid. Ink of which Prussian blue is the basis, is unaffected by any of the numerous physical causes which operate injuriously on black ink, unless it be exposed to a strong light, when the iron (which exists as a sesquioxide in Prussian blue) becomes deoxidized, and causes the color of this ink to fade; but on removing the writing from the influence of light the color is restored.

Purple, green, and yellow inks—also gold, bronze, etc.—are made, but not much used.

*Sympathetic Inks* leave no trace of color on the paper, but when exposed to heat or chemical action of some kind, become more or less distinctly apparent. The following are a few of the principal kinds of this class of compounds. On writing with a solution of sugar (acetate) of lead or of ternitrate of bismuth, and washing the paper with a solution of hydrosulphuric acid (sulphuretted hydrogen), the letters come out *black*. On writing with a solution of nitrate of cobalt, and washing the paper with a solution of oxalic acid, the letters come out *blue*. On writing with a solution of subacetate of lead, and washing the paper with a solution of iodide of potassium, the letters come out *yellow;* or on writing with a dilute solution of chloride of copper, and gently heating the paper, the letters previously invisible assume a beautiful *yellow* tint, which disappears on cooling. On writing with a solution of arsenite of potash, and washing the paper with a solution of nitrate of copper, the letters come out *green*.

2. *Printing-Ink* is a soft glossy compound, altogether different in its composition from the inks above described. The following are according to Mr. Underwood (in the paper already referred to), the necessary conditions of a good printing-ink: (1) It must distribute freely; (2) It must have much greater affinity for the paper than for the type; (3) It must dry almost immediately on the paper, but not dry at all on the type or rollers; this is a great desideratum, especially for newspapers; (4) It should be literally proof against the effects of time and chemical reagents, and should never change color. It is prepared by boiling the best linseed oil in an iron pot, kindling and allowing it to burn for a short time; by this operation the oil acquires the necessary drying quality. After being again boiled, resin is dissolved in it, to communicate body to the fluid, which now somewhat resembles Canadian balsam. The coloring matter—lamp-black for black ink; carmine, lake, vermilion, etc., for red ink; indigo or Prussian blue for blue ink; lemon and orange chrome (chromate and bichromate of lead), or gamboge, for yellow ink, etc.—is then added to the hot mixture, and the whole is drawn off, and finally ground into a smooth uniform paste.

In Lithography, a *writing* and a *printing-ink* are employed, both of which differ altogether from the compounds above described. The writing-ink is composed, according to Muspratt, of the following materials: shellac, soap, white wax, and tallow in certain proportions, to which is added a strong solution of gum-sandarac, and it is colored with lamp-black; while the printing-ink, employed to take impressions on paper from engraved plates, with a view to their transferrence to the stone, is composed of tallow, wax, soap, shellac, gum-mastic, black pitch, and lamp-black.

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INKBERRY, *ĭngk′bĕr-rĭ* (*Ilex glabra*): beautiful shrub formerly known as *prinos glaber,* but now classed with the holly family. It attains a height of 2–5 ft.; has slender flexible stems, oblong leathery leaves, dark green and with shiny upper surface, and small axillary flowers which produce small black berries. It grows on sandy soil along the Atlantic coast from New England to Florida. It is very popular among florists for decoration and bouquet uses, and is largely cultivated in s. New Jersey for the New York and Philadelphia floral markets.

INKERMANN, *ĭng-kĕr-mân′:* small Tartar village in the Crimea, near the e. extremity of the harbor of Sevastopol; memorable for a battle during the Russian war, between an army of Russians 60,000 strong, and detachments of allied forces of about 14,000 troops actually engaged. At about 6 o'clock in the morning, 1854, Nov. 5, the Russians, who had marched w. from Sevastopol, along the s. shore of the harbor, and whose movements were concealed by the darkness and a thick, drizzling rain, appeared crowding up the slopes of the plateau to the s., on which the allies were posted. Here a handful of men, about 1,400 strong, a portion of the 'Household Guards,' made a most heroic stand for six hours against a body of Russians probably ten times as numerous. Reinforcements, both English and French, coming up to the rescue, the Russians were finally driven from the field.

INKLE, n. *ĭngk′l* [F. *ligneul;* OF. *lignel,* strong thread used by shoemakers and saddlers—from L. *linĕŏlŭm,* a little line—from *linĕă,* a string of hemp or flax]: a kind of broad linen tape; bleached yarn.

INKLING, n. *ĭngk′lĭng* [Dan. *ymple,* to whisper, to spread a rumor: Icel. *ymta,* to whisper, to rumor; *uml,* a murmur]: a hint or whisper of some intelligence; an intimation.

INLACE, a. *ĭn-lās'* [*in*, into, and *lace*]: to embellish with work resembling lace. INLA'CING, imp. INLACED', pp. *-lāst'*.

INLAND, a. *ĭn'lănd* [*in*, into, and *land*]: interior; remote or distant from the sea; domestic; not foreign; in *OE.*, civilized, as opposed to *outlandish*, which see: N. interior part of a country. IN'LANDER, n. a dweller remote from the sea. INLAND BILLS, bills of exchange drawn and payable in the same country. INLAND TRADE, the home trade in goods spread over the country, which does not pass by sea. *Note.*—INLAND properly signifies, 'an accessible part of the country, a place near some great town or centre'—in contradistinction to UPLAND, 'a remote country district where manners were supposed to be rough and somewhat uncivilized.'

INLAY, v. *ĭn-lā'* [*in*, into, and *lay*]: to ornament a surface by inserting thin pieces of different color or material, e.g. ivory, pearl, fine wood, metal, etc. INLAY'ING, imp.: N. the art of inserting ivory, fine wood, metal, for decoration. INLAID, pp. and pt. *ĭn-lād'*. INLAY'ER, n. one who.—*Inlaying* wood of one color with others of different colors is now designated usually by the French term *marqueterie*. Metal of one kind is inlaid with other kinds, often with very beautiful effects. When steel is inlaid with gold or brass, it is usually called Damascene work. One variety produced in India is called Kuftgori—in this, the inlaid metal, usually gold, occupies more of the surface than the metal forming the ground. Another beautiful variety of Indian inlaying is called Tuten-ague or Bedery-work, which consists in making the article to be inlaid, most frequently a hookah-bowl, of an alloy consisting of copper one part to pewter four parts. This is hard, but is easily cut; the pattern is then engraved, and little pieces of thin silver cut to the desired forms are dexterously hammered into the spaces thus cut out to receive them. Ivory, pearl, shell, bone, totoise-shell, are favorite substances for inlaying wood; and stone or marble is inlaid with an immense variety of colored stones. In the art of stone inlaying, the Florentines have long held the palm; their favorite work is black marble, with inlaid figures of brilliant colored stones; this work is called *pietra dura*, or Florentine work. Very beautiful work of this kind, excelling the Florentine, is now made in the imperial works at St. Petersburg, where the art has of late been sedulously cultivated by the Russian government. This art was always a favorite in Delhi and Agra, where some of the most exquisite work is still produced. Usually, in the Indian work, white marble forms the groundwork, and the figures are formed of carnelian, jasper, agate, jade, lapis-lazuli, and other costly hard stones. No stone-inlaying has ever rivalled the inlaid marble walls of the celebrated Taj Mahal, tomb of the sultana of Shah

Jehan, at Agra. The designs are very artistic, the execution almost marvelous, and the harmony of color produced by the different stone is most beautiful. Many other materials than those mentioned are used for inlaying; and there is a style of inlaid work in which small squares of colored stone, glass, or pottery, are made to form pictorial and artistic decorations; this is called Mosaic-work (q.v.).

INLET, n. *ĭn'lĕt* [*in*, into, and *let*]: a small bay or recess on the shore of a lake, sea, or river, extending into the land; a place of ingress; a passage into.

INLIER, n. *ĭn'lī-ẽr* [*in*, into, and *lier*]: in *geol.*, the converse of *outlier;* a space occupied by one formation, which is completely surrounded by another that rests upon it.

IN LIMINE, *ĭn lĭm'ĭ-nĕ* [L. *līmen*, a door, an entrance]: in the entrance; from the first.

INLY, a. *ĭn'lĭ* [AS. *inlic*, internal]: internal; inward; secret: AD. internally; within.

INMAN, *ĭn'man*, HENRY: 1801, Oct. 28—1846, Jan. 17; b. Utica, N. Y.: painter. He studied painting with John W. Jarvis, opened a studio for portrait-painting in Boston 1822, removed to Philadelphia 1832, thence to Mount Holly, N. J., for the benefit of country air, and soon afterward to New York. In 1843, though failing in health, he went to England and spent a year painting portraits of Macaulay, Wordsworth, Chalmers, and Lord Cottenham, on orders from American admirers. He returned in the autumn 1845, secured a commisson for one of the panels in the rotunda of the national capitol, and died soon afterward. He was a founder and the first vice-pres. of the National Acad. of Design, introduced lithography into the United States, was best known for his portraits, painted numerous genre and historical works and landscapes, and was an entertaining writer.

INMATE, n. *ĭn'māt* [Icel. *inni*, within, and *mate*]: a dweller in a house; a member of the same family or house-hold; a lodger; in *OE.*, admitted as an inmate.

INMOST, a. *ĭn'mōst* [*in*, within, and *most:* AS. *innemest*]: furthest within; remotest from the surface.

INN, n. *ĭn* [Icel. *inni*, a house—from *inni*, within: AS. *inn*, a house—from *inn*, within: comp. Gael. *ion*, suitable, convenient; *ionad*, a place, an apartment]: formerly, a house; a mansion; a house for lodging and entertaining travellers; a tavern: V. in *OE.*, to house; to put under cover; to lodge. INN'ING, imp. INNED, pp. *ĭnd.* INN'-KEEPER, n. one who keeps an inn or tavern.

INN (ancient *Œnus*): river of Germany, the most important Alpine affluent of the Danube. It rises in the s. of the Swiss canton of Grisons, 4,293 ft. above sea-level, and flowing n.e. through that canton forms the valley of the Engadine (q.v.). It maintains generally

a n.e. course to its junction with the Danube. Leaving Switzerland, it enters the Austrian dominions at the village of Finstermunz, flows through the crown land of Tyrol, and crosses the s.e. angle of Bavaria, after which forming the boundary between Bavaria and Upper Austria, it enters the Danube at Passau, after a course of 285 m. Its principal affluent is the Salza from the south. It is regularly navigable from the town of Hall, 8 m. below Innsbruck. At its junction with the Danube, the Inn is broader than the Danube itself.

INN (see HOTEL), in English law: house of entertainment for travellers, which any person may set up without license like any other trade. It is when excisable liquors are sold that a license is required. Public-houses and ale-houses, however, are often practically synonymous terms with inns for the innkeeper almost invariably finds it expedient to obtain the necessary license to sell spirits and beer. (See BEER ACTS; PUBLIC-HOUSES; LICENSE, HIGH). The rights and duties of innkeepers irrespective of the license will here be noticed. In the first place, though public houses are always inns, yet beer houses are not so, the latter being merely shops for selling beer and a few other liquors, the distinguishing characteristic of the public-house being, that lodging and refreshment or food may be had on the premises by all comers. Taverns are chiefly for the sale of wines and liquors; victualling-houses or restaurants, for the sale of victuals; coffee-houses and hotels also are varieties, all of which may or may not in law be inns, according as they do or do not hold themselves out to give food, drink, and lodging to all comers; and it is not at all necessary that any sign-board be put up to distinguish the inn.

One of the incidents of an innkeeper is, that he is bound to open his house to all travellers without distinction, and has no option to refuse such refreshment, shelter, and accommodation as he possesses, provided the person who applies is of the description of a traveller, and able and ready to pay the customary hire, and is not drunk or disorderly, or tainted with infectious disease. He is, of course, bound to give only such accommodation as he has. If the traveller have a horse and luggage, the innkeeper is bound to receive these also, if he have accommodation, provided the traveller himself intends to lodge there as a guest. But the traveller is not entitled to select whatever room he pleases, and if he will not accept such reasonable accommodation as is offered, the innkeeper can order him to leave the house. As some compensation for this compulsory hospitality, the innkeeper is allowed certain privileges; thus, he has a lien on the horse and carriage or goods of the guest for that part of the bill or reckoning applicable to each respectively—i.e., he can keep these until he is paid for the keep, even though they

are not the property of the guest. But he cannot detain the person of his guest until payment be made, for if so, a man might be imprisoned for life without any legal process or adjudication. While, however, an innkeeper has this remedy for his score, he is also under great responsibility for the safety of his guests and their goods. By the Roman law, under the edict *nautæ, caupones, stabularii,* he was bound to restore safely whatever goods of his guests were intrusted to him, unless some *damnum fatale*, or some act of God, prevented his doing so. The principle of this rule has been adopted by the law of England, and thence in the law in the United States. Hence, if the guest be robbed of his goods at the inn, the innkeeper is liable, unless the robbery was caused by the guest's servant or companion, or by his own gross negligence, as, for example, by leaving a box containing money in a public part of the house after exposing its contents to the bystanders. So the innkeeper will be excused if the guest took upon himself the charge of his own goods, yet the guest does not take that charge by merely accepting from the landlord the key of the room, though that may be an element in the question. A guest who takes all reasonable precaution—as, for example, locking his room-door—and is yet robbed, has therefore a good claim on the landlord for indemnity; and the landlord will not escape liability by putting up a notice in his rooms, that he will not be answerable for such losses, otherwise guests would have no protection, for they are very much at the mercy of the keepers of such houses. In many of the states in this country, however, the laws do not hold an innkeeper responsible for loss of 'money, jewels, and ornaments,' if he provide a safe for the use of his guests which they being notified, neglect to avail themselves of. A boarder, not a traveller, merely taking his meals in a restaurant attached to an inn, is not in the legal sense a 'guest' of the inn itself, and has not precisely the same claim in case of loss. It has been attempted to extend the common-law liability of innkeepers for the safety of the goods of their guests to ordinary lodging-house keepers, but the courts have held that an ordinary boarding-house keeper or lodging-house keeper (and similarly an innkeeper in regard to boarders not travellers) is responsible for only ordinary care, i.e., such care as he takes of his own goods. He must, it is true, be careful in selecting his servants, but he is not bound absolutely to return the goods safe merely because they were in his house with the lodger.

INNATE, a. *ĭn'nāt* [L. *innātŭs*, inborn, natural—from *in*, into; *nātŭs*, born: It. *innato*]: inborn; native; natural; in *bot.*, applied to anthers when attached to the top of the filament. IN'NATELY, ad. *-lĭ.* IN'NATENESS, n. quality of being innate.

INNATE IDEA: an idea which is not acquired in the experience of the individual. John Locke (q.v.), an English philosopher, vigorously combatted a notion which was current in continental thought at the beginning of modern philosophy that certain ideas, like cause, space, time, etc., were inborn and not acquired. He held that the mind was at birth a blank tablet, *tabula rasa*, and never contained anything not impressed during life. The German philosopher, Immanuel Kant (q.v.), later argued that while the child was not born with such ideas; nevertheless the working of his mind involves from the first the relations of cause, space, time, etc., which therefore could not be explained as wholly acquired. Under an evolutionary interpretation, Herbert Spencer (q.v.) attributes such processes of thought to racial instead of individual acquisition.

INNER, a. *ĭn'nẽr* [AS. *inn;* Icel. *inni*, within]: comparative of *in;* further in; not outward; interior; inward; internal. IN'MOST, or IN'NERMOST, a superl. of *in;* furthest inward. INNER HOUSE, in Scotland, the higher divisions of the Court of Session (q.v.).

INNERVE, v. *ĭn-nẽrv'* [L. *in*, into; *nervus*, a nerve or sinew]: to invigorate; to strengthen. INNERV'ING, imp. INNERVED', pp. *-nẽrvd'*. IN'NERVA'TION, n. *-vā'shŭn*, the distribution of nerves by which nervous energy is given to any animal, or to a part; the functions of the nervous system.

INNES, *ĭn'ĕs*, ALEXANDER TAYLOR, Scottish jurist: b. Tain, Ross and Cromarty, Scotland, 1833, Dec. 18. He was educated at Edinburgh University, was admitted to the Scottish bar in 1870, appointed advocate-depute in Scotland in 1881, and served under later Liberal governments. Among his works are: *The Law of Creeds in Scotland* (1867); *Church and State: A Historical Handbook* (1890); *Studies in Scottish History* (1892); a life of Knox in the *Famous Seots* series (1896); *The Trial of Jesus Christ* (1899); and *The Law of Creeds* (1902).

INNES, THOMAS: 1662–1744, Jan. 28: b. Drumgask, county of Aberdeen, Scotland: author of *A Critical Essay on the Ancient Inhabitants of Scotland.* At the age of 15, he was sent by his father, a zealous Rom. Catholic, to the Univ. of Paris. He was ordained priest 1691, took his degree master of arts 1694, and for some years assisted his elder brother, Lewis, principal of the Scots College at Paris, in arranging the valuable records deposited there by James Beaton, last Rom. Cath. Abp. of Glasgow. In 1698, Innes returned to Scotland, and officiated as a missionary priest at Inveravon, in the old diocese of Murray. He again went to Paris 1701, and passed the rest of his life mostly at the Scots College. The great object of his life was to write the true history of Scotland, and to refute the fabulous narratives gen-

erally received by his countrymen. The latter part of his task was accomplished by his *Critical Essay,* pub. London 1729, in 2 vols. The difficulties in the way of his inquiry after the true Scottish history were very great. In Innes's time, the materials were for the most part in manuscripts, whose existence was unknown except to a few antiquaries. Every subsequent writer on this portion of Scottish history has admitted the high merit and the practical usefulness of Innes's work. He gave his ready aid to all engaged in pursuits similar to his own, particularly to Bishop Keith, and to Dr. Wilkins. He died at Paris. The *Critieal Essay* was reprinted at Edinburgh 1880 in a series of 'Historians of Scotland.' Innes wrote one vol. of a *Civil and Eeclesiastical History of Scotland,* extending from the introduction of Christianity to the death of St. Columbia 597; and another vol. was left incomplete, bringing down the narrative to the year 821. The whole was printed in one vol. by the Spalding Club 1853, and though imperfect is valuable. The author had learning, acuteness, and moderation, and loved truth better even than he loved his church. See preface to his *Civil and Ecelesiastical History.*

INNESS, George: landscape-painter: b. Newburg, N. Y., 1825, May 1; d. Bridge of Allan, Scotland, 1894, Aug. 3. He removed to Newark, N. J., at an early age, began studying drawing and oil-painting there; went to New York 1841, and studied engraving till ill-health compelled him to abandon it, studied painting one month with Regis Gignoux 1845, and began his career as a landscape-painter in New York the same year. He suffered from ill-health from boyhood, and resided in Boston, Eagleswood, N. J., Florence, Rome, and after 1875 in New York. He became a National academician 1868. He exhibited *Amerieau Sunset* at the Paris exhibition 1867; *St. Peter's, Rome, from the Tiber,* and *View near Medfield, Mass.,* in that of 1878, and *An Old Roadway, Long Island,* in the National Acad. the same year; *Under the Green Wood,* National Acad. 1882; *A Summer Morning,* 1883; *A Sunset,* and *A Day in June,* 1885; and *In the Woods, Sunset on the Sea-Shore,* and *Durham Meadows,* 1886.

INNESS, George, Jr., American painter: b. Paris, France, 1854, Jan. 5. He is the son of George Inness (q.v.), the landscape-painter. He was a pupil of the elder Inness at Rome in 1870–4, of Bonnat at Paris in 1875, began to exhibit at the National Academy in 1877, and became a member of the National Academy of Design in 1899. In 1899 he obtained a gold medal at the Paris Salon. His manner is forcible, and skilful in color. His work includes landscapes and animal subjects, among them: *The Pride of the Dairy* (1878); *Pasture at Chemung; A Mild Day* (1887); and *Morning on the River* (1902).

INNING, n. *in'ing* [from *in:* AS. *inn;* Icel. *inni,* within (see INN)]: in *base-ball* and *cricket,* the time during which a side is batting; a turn for using the bat; the time during which a person or party is in office. INNINGS, lands recovered from the sea. INNING, n. *in'ing* [OE. *inn,* to house or secure, as corn]: the securing or safely housing of corn when ripe.

INNISCATTERY. See SCATTERY ISLAND.

INNISHER'KIN: small island on the s. coast of Ireland, belonging to the county of Cork, from the shore of which it is separated by a channel a quarter of a m. in width; about one m. n.e. of Clear Island. It is well cultivated, and contains some good slate-quarries. Pop. more than 1,000.

INNOCENT, a. *in'nō-sĕnt* [F. *innocent*—from L. *innŏcens,* or *innŏcen'tem,* harmless, blameless—from *in,* not; *nŏcĕō,* I hurt: It. *innocente*]: not producing injury; harmless in effects; free from crime or evil actions; blameless; pure; spotless; N. *literally,* one free from guilt or guile; a person deficient in intellect; an idiot. IN'NOCENTLY, ad. *-lĭ.* IN'NOCENCE, n. *-sĕns* [F.—L.], or IN'NOCENCY, n. *-sĕn-sĭ,* freedom from any quality that can injure; freedom from some particular sin or guilt; purity or simplicity of heart. INNOCENTS, n. plu., see INNOCENTS, HOLY, FEAST OF THE.—SYN. of 'innocent a.': inoffensive; harmless; guiltless; upright; immaculate; innoxious; unblamable; guileless; faultless; unhurtful; innocuous; lawful; permitted; in *OE.,* ignorant; idiotic; imbecile.

IN'NOCENT I., Pope: ruled 402–417; native of Albano; d. 417. Next to the pontificate of Leo the Great, that of Innocent I. forms the most important epoch in the history of the relations of the see of Rome with the other churches, both of the East and of the West. Under him, according to Prot. historians, the system of naming legates to act in the name of the Roman bishop in different portions of the church originated; while Rom. Catholics admit that at least it then received fuller organization and development. He was earnest and vigorous in enforcing the celibacy of the clergy. He maintained, with firm hand, the right of the Bishop of Rome to receive and to judge appeals from other churches, and his letters abound with assertions of universal jurisdiction, to which Rom. Catholics appeal as evidence of the early exercise of the Roman primacy, and from which Dean Milman infers that there had already 'dawned upon his mind the conception of Rome's universal ecclesiastical supremacy, dim as yet and shadowy, yet full and comprehensive in its outline' (*Latin Christianity,* i. p: 87).

INNOCENT II. (GREGORIO DE' PAPI, or PAPARESCHI): b. Rome; d. 1143, Sept. 23. He was elected pope in 1130 by a part of the cardinals, while the others elected

Peter of Leon, who took the name of Anacletus. Innocent fled to France, where he was acknowledged by the Council of Etampes, by Louis VI., and soon after by Henry II. of England; also by the Emperor Lothaire, who conducted him in 1133 to Rome, where he occupied the Lateran, while Anacletus occupied the Castle of Crescentius, the Church of St. Peter, and a large part of the city and maintained himself against Innocent until his death in 1138. He held the second Ecumenical Council in the Lateran, which condemned Arnold of Brescia and his heresy, declared all the decrees of Anacletus null, and excommunicated Roger of Sicily, who had supported the latter. Roger, however, obliged Innocent to acknowledge him as king, absolve him from excommunication, and invest him and his heirs with Apulia, Calabria, and Capua.

INNOCENT III. (Lothario Conti), Pope: next to Gregory VII., probably the greatest of those who have occupied the papal chair: 1161–1216, July 16 (ruled 1198–1216); b. Anagni; son of Count Trasimundo. After a course of much distinction at Paris, Bologna, and Rome, he was made cardinal; and 1198, was elected, at the unprecedentedly early age of 37, successor of Pope Celestine III. His pontificate is justly regarded as the culminating point of the temporal, as well as the spiritual supremacy of the Roman see; and it is freely avowed by the learned Prot. historian of Latin Christianity, that if ever the great idea of a Christian republic, with a pope at its head, was to be realized, 'none could bring more lofty or more various qualifications for its accomplishment than Innocent III.' (iv. p. 9.) Accordingly, under the impulse of his ardent but disinterested zeal for the glory of the church, almost every state and kingdom was brought into subjection. In Italy, during the minority of Frederick II. (son of Emperor Henry VI., King of Italy), who was a ward of Innocent's, the authority of the pope within his own states was fully consolidated, and his influence among the other states of Italy was confirmed and extended. In Germany, he adjudicated with authority on the rival claims of Otho and Philip: and a second time he interposed effectually in behalf of his ward, Frederick II. In France, espousing the cause of the injured Ingerburga, he compelled her unworthy husband, Philip Augustus, to dismiss Agnes de Meranie, whom he had unlawfully married, and to take back Ingerburga. In Spain, he exercised a similar authority over the king of Leon, who had married within the prohibited degrees. The history of his conflict with the weak and unprincipled John of England exhibits in a light less favorable than do his other contests, Innocent's character for consistent adherence to principle, and his lofty indifference to the suggestions of expediency; but it displays in stronger light the extent of his claims and the completeness of

his supremacy. In Norway, he exercised the same authority in reference to the usurper Swero. In Aragon, he received the fealty of the king Alfonso. Even the king of Armenia, Leo, received his legates, and accepted from them the investiture of his kingdom. And, as if in order that nothing might be wanting to the completeness of his authority throughout the then known world, the Latin conquest of Constantinople, and the establishment of the Latin kingdom of Jerusalem, put an end, at least during his pontificate, to the shadowy pretensions of the eastern rivals of his power, spiritual as well as temporal. Pursuing consistently the great idea which inspired his entire career, his views of the absoluteness of the authority of the church within her own dominion were no less unbending than his notion of the universality of its extent. To him, every offense against religion was a crime against society, and, in his ideal Christian republic, every heresy was a rebellion which it was the duty of the rulers to resist and repress. It was at his call, therefore, that the crusade against the Albigenses was organized and undertaken; and though he can hardly be held responsible for the fearful excesses of cruelty into which it ran, and though at its close he used all his endeavors to procure the restitution of the lands of the young Count of Toulouse, yet it is clear from his letters that he regarded the undertaking itself not merely as lawful, but as a glorious enterprise of religion and piety. As an ecclesiastical administrator, Innocent holds a high place in his order. He was a vigorous guardian of public and private morality, a steady protector of the weak, zealous in the repression of simony and other abuses of the time. He prohibited the arbitrary multiplication of religious orders by private authority, but he lent all his power and influence to the remarkable spiritual movement in which the two great orders, the Franciscan and the Dominican (q.v.), had their origin. It was under him that the celebrated fourth Lateran Council was held 1215. In the following year, he was seized with his fatal illness, and died at Perugia, at the early age of 56. His works, principally letters and sermons, and a remarkable treatise *On the Misery of the Condition of Man*, were published in two vols. folio (Paris 1682). It is from these letters and decretals alone that the character of the age, and the true significance of the church-policy of this extraordinary man, can be fully understood; and it is only from a careful study of them, that the nature of his views and objects can be realized in their integrity. However earnestly men may dissent from these views, no student of mediæval history will refuse to accept Dean Milman's verdict on the career of Innocent III., that 'his high and blameless, and, in some respects, wise and gentle character, seems to approach more nearly than any one of the whole succession of Roman

bishops to the ideal light of a supreme pontiff;' and that 'in him, if ever, may seem to be realized the churchman's highest conception of a vicar of Christ' (*Latin Christianity*, iv. 277).

INNOCENT IV. (SENIBALDI DI FIESCHI): d. Naples, 1254, Dec. 7. He became Pope in 1243 and was perpetually at feud with the German emperor Frederick and his successors.

INNOCENT V. (PIETRO DI TARENTASIA): b. 1225; d. Rome 1276, June 22. His pontificate lasted only from January 20 to June 22 of the year 1276.

INNOCENT VI. (ETIENNE D'ALBERT): b. Brissac, France; d. 1362, Sept. 12. His pontificate extended from 1352 to 1362, and during this period the Papal residence was at Avignon.

INNOCENT VII. (COSMO DE' MIGLIORATI): b. Sulmona, Abruzzi, Italy, 1366; d. Rome 1406, Nov. 6. He was Pope from 1404 till his death, but was opposed by the antipope, Benedict XIII., who held his court at Avignon.

INNOCENT VIII. (GIOVANNI BATTISTA CIBO): b. Genoa 1432; d. 1492, July 25. He became Pope in 1484 and was for some time at war with Ferdinand of Naples and held the sultan Bajazet's brother Zelim a prisoner.

INNOCENT IX. (GIOVANNI ANTONIO FACCHINETTI): b. Bologna, Italy, 1519; d. 1591, Dec. 30. He occupied the papal chair only from the 29th of October preceding his death.

INNOCENT X. (GIOVANNI BATTISTA PAMFILL): b. Rome, 1574, May 7; d. 1655, Jan. 6. In 1629 he was elevated to the cardinalate and became Pope in 1644. Under him the temporal and spiritual power of the papacy was greatly increased. In 1651 he condemned the Treaty of Westphalia and he formally condemned Jansenism in 1653.

INNOCENT XI. (BENEDETTO ODESCALCHI), Pope: 1611–1689, Aug. 12 (ruled 1676–89); b. Coms; one of the most distinguished among the popes of the 17th c. He was a vigorous and judicious reformer, and his administration is entirely free from the stain of nepotism, which had sullied the fame of many of his predecessors. But his historical celebrity is owing mainly to his contest with Louis XIV., which illustrates as well the personal character of the pontiff, as the peculiar spirit of the age. The dispute began from an attempt on the part of the pope to put an end to the abuse of the king's keeping sees vacant, in virtue of what was called the *Droit de Regale*, and appropriating their revenues. The resistance to this attempt drew forth the celebrated declarations of the French clergy as to the Gallican Liberties. (See GALLICAN CHURCH.) But the actual conflict regarded the immunities enjoyed by the

foreign ambassadors residing in Rome, and especially the right of asylum, which they claimed not only for their own residences, but also for certain adjoining districts of the city. These districts had gradually become so many foci of crime, and of frauds upon the revenue; and the pope, resolving to put an end to so flagrant an abuse, gave notice that, while he would respect the rights of the existing ambassadors, he would not thereafter receive the credentials of any new ambassador who should not renounce these abusive claims for himself and his successors. The great powers murmured at this threat, but it was with France that the crisis occurred, on the death of Maréchal d'Estrées. The pope renewed his notice 1687, May. Louis XIV., on the other hand, instructed his new ambassador to maintain the dignity of France, and sent a large body of military and naval officers to support his pretensions. Innocent persisted in refusing to grant an audience to the ambassador. Louis, in reprisal, seized on the papal territory of Avignon, and threatened to send a fleet to the coast of the Papal States, but Innocent was immovable; and in the end, the ambassador was compelled to return with his credentials unopened, nor was the dispute adjusted till the following pontificate.

INNOCENT XII. (Antonio Pignatelli): b. Naples, 1615, March 13; d. 1700, Sept. 27. He became archbishop of Naples, a cardinal in 1681 and Pope in 1692. During his pontificate Louis XIV. and the French bishops revoked the Declaration of the French clergy, and submitted to the judgment of the Holy See in the matters in dispute during the pontificate of Innocent XI.

INNOCENT XIII. (Michelangelo Conti): b. Rome, 1655, May 15; d. 1724, March 7. In 1695 he was made archbishop of Tarsus and became a cardinal in 1707. He was also made bishop of Viterbo in 1712 and succeeded Clement XI. in the papal chair in 1721.

IN'NOCENTS, Holy, Feast of the: one of the Christmas festivals, held in the Western Church Dec. 28; in the Eastern, Dec. 29, under a similar title. It is intended to commemorate the massacre of the children 'from two years old and upward' at Bethlehem: see Herod. These children are referred to as martyrs by St. Cyprian, and still more explicitly by St. Augustine; and it is to them that the exquisite hymn of Prudentius, *Salvete Flores Martyrum*, is addressed. The concurrence of the East and West in celebrating the festival is an evidence of its antiquity. In the modern church, this feast is celebrated as a special holiday by the young, and many curious customs connected with it prevail in Rom. Cath. countries. One of these is, that in private families the children are on this day privileged to wear the clothes of the elders, and in some sort to exercise

authority over the household in their stead. So also, in communities of nuns, the youngest sister becomes for this day superioress of the house and exercises a sort of sportive authority over even the real superiors.

INNOCUOUS, a. *ĭn-nŏk'ū-ŭs* [L. *innŏcŭŭs*, harmless—from *in*, not; *nŏccō*, I hurt: It. *innocuo*]: harmless in effects; safe. INNOC'UOUSLY, ad. *-lĭ*. INNOC'UOUSNESS, n. *nĕs*.

INNOMA, n. *ĭn-nō'mă*, properly INOMA, *ī-nō'mă* [Gr. *is*, a fibre, *mos*, of a fibre]: in *med.*, a new growth of connective tissue forming a distinct isolated mass, or fibrous tumor.

INNOMINATE, a. *ĭn-nŏm'ĭ-nāt* [mid. L. *innomĭnātus*, not named—from L. *in*, not; *nōmĕn*, a name]: without a name; in *anat.*, applied to a bone forming half of the pelvis, composed of three portions, the haunch-bone, the hip-bone, and the share-bone (see PELVIS). INNOMINATE ARTERY (*Arteria innominata*), first large branch given off from the arch of the aorta. It varies from an inch and a half to two inches in length, and divides into the right carotid and the right subclavian arteries. (See CIRCULATION). This artery, through which all the blood to the right side of the head and neck, and to the right arm, flows, has been tied by several surgeons for aneurism of the right subclavian, but the operation has never been successful. An important fact has, however, been established, viz., that the circulation of the blood in the parts supplied by this large vessel, is re-established by anastomosis (q.v.) after the operation.

INNOVATE, v. *ĭn'nō-vāt* [L. *innŏvātus*, renewed—from *in*, into; *nŏvus*, new: It. *innovare:* F. *innover*]: to change or alter by introducing something new; to make changes. IN'NOVATING, imp. IN'NOVATED, pp. IN'NOVATOR, n. one who. IN'NOVA'TION, n. *-shŭn* [F.—L.]: change by the introduction of something new; change in established laws or practices: in *bot.*, buds in mosses: in *Scotch law*, substitution of one obligation for another—called sometimes Novation.

INNOXIOUS, n. *ĭn-nŏk'shŭs* [L. *innoxĭŭs*, harmless—from *in*, not; *noxĭŭs*, hurtful]: harmless; free from hurtful qualities. INNOX'IOUSLY, ad. *-lĭ*. INNOX'IOUSNESS, n.

INNSBRUCK, *ĭns'prûk*, or INNSPRUCK: capital of the Tyrol, charmingly situated on the right bank of the Inn, at its junction with the Sill, 1,900 ft. above sea-level, in a valley surrounded by mountains 6,000 to 9,200 ft. high. It is connected with the suburb of St. Nicolaus, on the left bank, by a wooden bridge, from which the name of the town (*Inn's Brücke*, Ger. the Inn's Bridge) is derived. The Inn is crossed also by a chain bridge a little below the town. The Franciscan church, or Hofkirche, architecturally uninteresting, is remarkable for its

elaborate monument to Emperor Maximilian I., which, though constructed at the request of Maximilian, and intended for his burial place, does not contain his remains. The monument consists of a marble sarcophagus supporting the emperor's effigy in bronze, in a kneeling-posture; while on both sides of the aisle are rows of monumental bronze figures, 28 in number, representing a variety of distinguished personages, male and female. In this church, 1651, Nov. 3, Christina (q.v.) of Sweden was solemnly received into the Rom. Cath. Church. The other chief buildings are the Ferdinandeum, a museum containing a collection of the productions of the Tyrol in art, literature, and natural history; and the university (founded 1672, and, after several vicissitudes, organized anew 1825), with faculties, which has now more than 500 students and about 70 professors and lecturers. Innsbruck has important manufactures of woolen cloth, silk, gloves, ribbons, and carved work, as well as a flourishing transit trade. It is connected with Munich by railway, and a railroad across the Brenner Pass, completed 1867, unites Innsbruck with Botzen and Verona. Pop. 24,000.

INNS OF COURT: certain voluntary societies which have the exclusive right of calling persons to the English bar. There are four such societies in London, viz., the Inner Temple, the Middle Temple, Lincoln's Inn, and Gray's Inn, named from their places of meeting and residence, formerly the mansions of Lord Gray, Earl of Lincoln, etc. Each of those inns possesses certain smaller inns, which are mere collections of houses or chambers, as Clifford's Inn, New Inn, Furnival's Inn, etc. The four inns are each governed by a committee or board, called the benchers, who are king's or queen's counsel or senior counsel, each new member being chosen by the existing benchers. Each inn has also a local habitation, consisting of a large tract of houses or chambers, which are in general occupied exclusively by barristers, and sometimes by attorneys, and are a source of great wealth. Each inn maintains a chapel with a preacher and other clergy, with the services of the Church of England. The Inner and the Middle Temple occupy jointly the ancient and beautiful Temple Church (see TEMPLARS, KNIGHTS; TEMPLE). Each inn is self-governing, and quite distinct from the others, all, however, possessing equal privileges; but latterly, they have joined in imposing certain educational tests for the admission of students. It is entirely in the discretion of an inn of court to admit any particular person as a member, for no member of the public has an absolute right to be called to the bar, there being no mode of compelling the inn to state its reasons for refusal. But, practically, no objection is ever made to the admission of any person of good character. Each inn has also the power

of disbarring its members, that is, of withdrawing from them the right of practicing as counsel. This right has been rarely exercised, but of late years there have been rarely exercised, but of late years there have been exexamples of persons abusing their profession, and indulging in dishonest practices; in such cases, the inn has its own mode of inquiring into the facts affecting the character of a member, and is not bound to make the investigation public. By this high controlling power over its members, a higher character is supposed to be given to the bar as a body, than if each individual was left to his own devices, unchecked, except by the law. See BARRISTER.

INNUENDO, n. *ĭn'nū-ĕn'dō,* IN'NUEN'DOES, n. plu. *-dōz* [L. *innuen'dum,* a nodding to or towards, an intimation; *innuen'do,* by an intimation—from *innŭĕns,* nodding to—from *in,* to, towards; *nŭō,* I nod: It. *innuendo—lit.,* suggestion by a nod]: an indirect or oblique hint; an indirect intimation or reference: in *law,* part of a pleading in cases of libel and slander, pointing out what and who was meant by the libellous matter.—SYN.: insinuation; representation; suggestion; hint; intimation; reference.

INNUIT. See ESQUIMAUX.

INNUMERABLE, a. *ĭn-nū'mĕr-ă-bl* [F. *innumérable*—from L. *innumĕrābĭlĭs,* countless—from *in,* not; *numĕrŭs,* a number: It. *innumerabile*]: that cannot be numbered for multitude; countless. INNU'MERABLY, ad. *-blĭ.* INNU'MERABIL'ITY, n. *-bĭl'ĭ-tĭ.* INNU'MERABLENESS, n. *-bl-nĕs.*

INNUTRITIOUS, a. *ĭn'nū-trĭsh'ŭs* [*in,* not, and *nutritious*]: not supplying nourishment. INNU'TRITIVE, a. *-trĭ-tĭv,* not nourishing. IN'NUTRIT'ION, n. *-trĭsh'ŭn,* want of nutrition.

INO, *ī'no,* in Greek Mythology: daughter of Cadmus and Harmonia, who was secretly married to Athamas, King of Thebes, after he had divorced Nephele. Athamas had two children, Phryxus and Helle, by Nephele: and two, Melicerta and Learchus, by Ino. As the children of the latter grew up, Ino became intense in her hatred against Nephele's children, because they had prior claims to the throne, and persuaded the king that the angry gods would be appeased only with the death of his first-born children. Nephele heard of Ino's plans, and carried her children to Colchis. The anger of Juno then fell on Ino and the king. The latter was maddened, and believing Ino to be a lioness and her children whelps, pursued and killed Learchus. Ino escaped his fury and with Melicerta leaped into the sea when Neptune, moved to pity, changed her into a sea goddess by the name of Leucothea, and Melicerta into a sea god known as Palæmon. Variations of this myth are found in the tragedies of Æschylus, Sophocles, Euripides, and Achæus.

INOBSERVANT, a. *ĭn'ŏb-zĕr'vănt* [*in,* not, and *obser-*

*vant:* L. *inobservan'tĭă,* inattention, negligence]: not taking notice. IN'OBSER'VANTLY, ad *-lĭ.* IN'OBSER'VABLE, a. *-vă bl,* not capable of being observed. IN'OBSER'VANCE, n. *-văns,* heedlessness; negligence; disregard.

INOCARPIN, n. *ĭn-o-kâr'pĭn* [mod. L. *inocarpus*]: a red coloring-matter contained in the juice of the *Inocarpus edulis.* The juice is at first colorless, but on exposure to the air turns red, and dries up to a gummy mass. It is soluble in water and in alcohol, but insoluble in ether.

INOCARPOUS, a. *ĭn'ō-kâr'pŭs* [Gr. *īs,* or *ĭnă,* a fibre; *karpos,* fruit]: having fibrous fruit.

INOCAR'PUS (*I. edulis*): the *Mape* or *Rata* of the South Sea Islands; a tree important for its fruit, a nut covered with a thin fibrous husk, which supplies the natives with a considerable part of their food, and is sometimes called the South Sea Island chestnut. The fruit is pulled in a green state and roasted. The tree is very beautiful, of stately growth and fine foliage; the leaves oblong, six or eight inches long, evergreen, but of delicate texture. It is one of those which, as they advance in age, instead of increasing uniformly in thickness, throw out buttresses to support the trunk. Small projections first appear, extending in nearly straight lines from the root to the branches, which finally become like so many planks covered with bark. The central stem continues for many years perhaps only six or seven inches in diameter, while the buttresses, two or three inches thick, extend from it at the bottom two, three, or four feet. These natural planks are used for paddles of canoes and other purposes.

INOCERAMUS, n. *ĭ'nō-sĕr'ă-mŭs* [Gr. *īs,* or *ĭnă,* a fibre; *kerămos,* an earthen vessel]: in *geol.,* a genus of fossil bivalves, found in the secondary formations, belonging to the wing-shells or pearl-oysters—so named from the fibrous structure of their shells.

INOCULATE, v. *ĭn-ŏk'ū-lāt* [L. *inocŭlātus,* ingrafted by inserting an eye or bud of one tree into another—from *in,* into; *ocŭlus,* an eye: F. *inoculer,* to inoculate—*lit.,* to put in an eye]: to communicate a mild form of a disease, as the *small-pox,* by inserting infectious matter into the punctured skin or flesh; to bud; to propagate a plant by inserting one of its buds or eyes into another stock; to furnish a bud for, or insert a bud into. INOC'ULATING, imp. INOC'ULATED, pp. INOC'ULATOR, n. *-lā-tĕr,* one who. INOC'ULA'TION, n. *-lā'shŭn* [F.—L.]: act of inserting the eye or bud of a plant into another stock with the view of producing fruits or flowers of different kind: in *med. practice,* see below.

INOCULA'TION: act or practice of communicating disease by inserting contagious matter into the punctured skin. If the matter of a variolous (or smallpox) pus-

tule, taken after the commencement of the eighth day, be inserted in or beneath the skin of a person who has not previously had smallpox, the following phenomena are induced: 1. Local inflammation is set up; 2. At the end of six days there is fever similar to that of smallpox; 3. After three more days, there is a more or less abundant eruption of pustules. This process is termed inoculation, and the disease thus produced is denominated inoculated smallpox. The disease produced in this artificial manner is much simpler and less dangerous than ordinary smallpox; and as it was an almost certain means of preventing a subsequent attack of the ordinary disease, inoculation was much practised till the discovery of vaccination, about 1796. This was the year in which Jenner inoculated his first case (the boy Phipps) with matter taken from the hand of a girl who had been directly infected by the cow. He was aware of the protective efficiency of cow-pox in 1770. Inoculation was long practiced in the East and was introduced into Great Britain by Lady Mary Wortley Montagu who described the operation in a letter written from Adrianople in 1717. In that letter she writes: 'The smallpox, so fatal and so general amongst us, is here entirely harmless, by the invention of *engrafting*, which is the term they give it. Every year, thousands undergo the operation. There is no example of any one who has died of it, and you may believe that I am well satisfied of the safety of this experiment, since I intend to try it on my dear little son.' Four years afterward, she had her daughter publicly inoculated in England; the experiment was then performed successfully on six condemned criminals at Newgate, and on the strength of these successful cases, two children of Caroline, Princess of Wales, were inoculated, which gave a sanction to the practice.

The fatal drawback of inoculation was that, while it protected the person inoculated from a severe form of the disease, it nevertheless gave him true smallpox communicable to others by contagion, and thus served to spread the disease more widely through the community. Thus the benefits expected from inoculation were not realized, and smallpox would doubtless have gone on increasing in its destructive power, if it had not been checked by Jenner's discovery of VACCINATION (q.v.). Vaccination is done with the cowpox virus, inoculation with the smallpox virus. Inoculation is now discontinued.

INODOROUS, a. *ĭn-ō'dėr-ŭs* [L. *inŏdōrŭs*, without smell—from *in*, not; *ŏdŏr*, scent, smell: It. *inodoro:* F. *inodore*]: wanting scent; having no smell.

INOFFENSIVE, a. *ĭn'ŏf-fĕn'sĭv* [F. *inoffensif: in*, not, and Eng. *offensive*]: harmless; giving no offense, provocation, or uneasiness; doing no injury or mischief. IN'OFFEN'SIVELY, ad. *-lĭ*. IN'OFFEN'SIVENESS, n. *-nĕs*.

INOFFI'CIOUS TES'TAMENT: a will whereby near relatives have not been provided for by the testator.

INOPERATIVE, a. *ĭn-ŏp'ĕr-ā-tĭv* [*in*, not, and *operative*]: producing no effect; not active.

INOPERCULAR, a. *ĭn'ō-pĕr'kū-lĕr* [L. *in*, not; *oper'cŭlŭm*, a lid]: without an operculum or lid—applied to certain univalve shells. INOPERCULATA, n. plu. *ĭn'ō-pĕr-kū-lā'tă*, certain univalve shells in which there is no shelly or horny plate to close the shell when the animal is withdrawn within it.

INOPPORTUNE, a. *ĭn-ŏp'pŏr-tūn* [F. *inopportun*—from L. *inopportūnŭs*, unsuitable—from *in*, not; *opportūnus*, suitable]: inconvenient; unseasonable. INOP'PORTUNELY, ad. *-lĭ*.

INORDINATE, a. *ĭn-ŏr'dĭ-nāt* [L. *inordĭnātŭs*, irregular—from *in*, into; *ordĭnō*, I put in order]: irregular; not limited to rules; excessive. INOR'DINATELY, ad. *-lĭ*. INOR'DINATENESS, n. *-nĕs*, want of regularity; excess.—SYN. of 'inordinate': immoderate; extravagant; exorbitant; unlimited; disorderly.

INORGANIC, a. *ĭn'ŏr-găn'ĭk*, or IN'ORGAN'ICAL, a. *-ĭ-kăl* [*in*, not, and *organic*: F. *inorganique*]: not endowed with the organs or instruments of life; not produced by vital action; in *med.*, not apparently connected with change in structure. IN'ORGAN'ICALLY, ad. *-lĭ*. INOR'GANIZED, a. *-īzd*, not having organic structure, as earths or metals.

INOSCULATE, v. *ĭn-ŏs'kū-lāt* [L. *in*, into; *oscŭlātus*, kissed—from *os'cŭlŭm*, a little mouth]: to unite as two vessels in a living body; to unite by contact. INOS'CULATING, imp. INOS'CULATED, pp. INOS'CULA'TION, n. *-shŭn*, union by mouths or ducts; in *bot.*, grafting or inserting buds in other stocks.

INOSIA, or IN'OSITE (formerly PHASEO-MANNITE). See SUGAR.

INOSIN, INOSINIC. See under INOSITE.

INOSITE, n. *ĭn'ō-sīt*, or INOSIN, n. *īn'ō-sĭn* [Gr. *ĭs*, fibre or muscle, *ĭnos*, of fibre]: $C_6H_{12}O_6$ a saccharine substance found in the muscular tissues of the heart, as well as liver, brain, kidneys, etc. It appears both in health and, to an abnormal amount, in disease. It exists also in a number of plants, such as fox-glove, potato, kidney-bean, acacia, asparagus, cabbage. See GLUCOSE. INOSINIC, a. *īn'ō-sĭn'ĭk*, applied to an acid obtained from muscular fibre. INOSINATE, n. *īn-ŏs'ĭn-āt*, the combination of inosinic acid with a base. INOSURIA, n. *ĭn'ō-sū'rĭ-ă* [Gr. *ourĕō*, I make water]: excretion of muscle-sugar in the urine.

INO'UYE KAYO'RU, Count: statesman: b. Choshiu, Japan, 1839. He belongs to an aristocratic family, was educated in Europe, and entered public life in Japan, 1864. After the restoration of the ancient system of nation-

al govt., 1868, he attracted the favor of the Mikado, was appointed minister of finance, special ambassador to negotiate a treaty with Corea (signed 1876, Feb. 27), and a commissioner to the centennial exhibition at Philadelphia. On his return he was appointed minister of foreign affairs, created a count, and placed in charge of the negotiations for the revision of the treaties with the western nations. In 1884, Dec., the pro- and anti-Japanese parties in the Corean capital precipitated a riot, in which the new Japanese legation was destroyed, and the Corean troops sided with the Chinese milit. contingent allowed in Seoul in driving the Japanese troops and officials beyond the city gate and to Chimulpo, the seaport. Two weeks afterward the Mikado sent Inouye as special ambassador to Corea, and he negotiated a convention by which the king agreed to pay Japan $500,000 indemnity; rebuild the legation, and allow a garrison of 1,500 Japanese troops in Seoul. In 1892 he was again called to the office of minister of the interior and is now one of the elder statesmen.

IN PACE, *ĭn pā'sĕ* [L. *in*, in; *pax*, peace, *pācĕ*, with peace]: in peace.

IN PARI CAUSA, in Law: a term employed to denote that two parties are in equal right according to law, in which case, according to usage, the party having possession is regarded as of best right.

IN PARI DELICTO, in Law: a term indicating that both parties to an issue are equally at fault, a case in which no relief can be obtained.

IN PARTIBUS, or In Partibus Infidelium, *ĭn pâr'-tĭ-bŭs ĭn'fĭ-dē'lĭ-ŭm* [L. *in*, into; *partĭbus*, in or with the parts; *infĭdēlĭŭm*, of the heathen]: in regions where the people are unfaithful or do not belong to the Rom. Cath. Church; among the heathen. In the Rom. Cath. Church a *bishop in partibus* is one who takes his title from an anc. bishopric of a country formerly Christian, but now wholly infidel, as from a district of Asia Minor or n. Africa, where there are now no Rom. Catholics, or scarcely any; such a bishop, nevertheless, may exercise his episcopal functions as a missionary bishop in a Prot. country, or in a colony where there are Rom. Catholics. Since the Rom. Cath. hierarchy has been established in England and Scotland the bishops in these countries are no longer *bishops in partibus*. Titular bishops in the church of Rome have been styled bishops *in partibus infidelium* since the 13th c. They are actual bishops, who have no diocese, and take their titles from places where there is now no bishop's see, but where there once was. This practice originated after the Greek schism, and became general in the time of the Crusades. The places conquered by the crusaders in the East were furnished with Rom. Cath. bishops: but when these conquests were again lost, the popes continued to appoint

and consecrate the bishops, as a continual protest against the power which had prevailed over their alleged right, and to signify their hope of restitution. The same policy has been pursued with regard to Prot. countries. But in Britain, the assumption of territorial titles being illegal and dangerous, the Rom. Cath. bishops actually resident have usually borne titles derived from distant places. Thus, till 1878, the bishop in Edinburgh was styled bishop of Abila. The Rom. Cath. bishops in England were similarly designated from places abroad until 1850, when their assumption of titles from their actual sees gave prodigious offense to the Church of England, and led to the passing of the *Ecclesiastical Titles Bill*, which, however, remained a dead letter, and was repealed, 1871.

IN PERPETUUM, *ĭn pĕr-pĕt'ū-ŭm* [L.]: to perpetuity; perpetually; for ever.

IN PERSO'NAM. See IN REM.

IN PETTO, *ĭn pĕt'tō* [It. *in*, in; *petto*, the breast—from L. *pectus*, the breast]: in the heart; inwardly; in secret.

IN POSSE, *ĭn pŏs'sĕ* [L.—*lit.*, to be able]: in possible existence; that may be possible.

INQUEST, n. *ĭn'kwĕst* [L. *inquisītŭs*, searched or inquired into—from *in*, into; *quæro*, I seek or look for: OF. *enqueste*, an inquiry]: judicial inquiry or examination; jury empanelled to inquire concerning a fire, or concerning a sudden death (see CORONER). INQUEST OF OFFICE, process to give the govt. possession of escheated lands, tenements, or chattels: the case must be tried before a jury. In the *United States*, it is applicable for forfeiture to the state of property in lack of heirs; and under the laws of some states, to vest in the state the title to real estate held by aliens.

INQUIETUDE, n. *ĭn-kwī'ĕ-tūd* [F. *inquiétude*, uneasiness—from L. *inquiētūdĭnem*, restlessness—from *in*, not; *quiētus*, quiet, undisturbed]: disturbed state; want of rest of mind or body.

INQUILINE, *ĭn'kwĭ-lĭn*, a term applied in zoology to animals which live as tenants within the nests or homes of other animals. The use of the term is almost entirely confined to entomology and then often restricted to the cases in which the rightful and the intruding tenants are closely related. Similar cases among other animals are commonly designated as commensalism, but these and similar terms are used rather loosely. Examples of the inquiline relation occur among the termites, ants, and bees, but are known especially among the gall-flies (*Cynipidæ*); indeed, one entire division, comprising more than 500 species, is named *Inquilinæ*, because of the predominance of this mode of life. These insects differ but little in structure from the true gall-flies, but they

lack the power to produce galls, and consequently deposit their eggs within those of other species. They infest certain species of galls, as those of the blackberry and some oak-galls, in large numbers and sometimes more than one kind occur in a single gall. Perhaps the most remarkable feature of these inquilines is their frequent close resemblance to the insect which produces the gall which they infest.

INQUIRE, v. *ĭn-kwīr'* [L. *inquīrĕrĕ*, to seek after—from *in*, into; *quæro*, I seek: F. *enquérir*]: to seek for or after by questions; to seek, as for truth by discussion or investigation; to ask about. INQUI'RING, imp.: ADJ. given to search or inquiry. INQUIRED', pp. *-kwīrd'*. INQUI'RER, n. *-rĕr*, one who asks a question; a searcher after knowledge. INQUI'RINGLY, ad. *-lĭ*. INQUIRY, n. *ĭn-kwī'rĭ*, a question; search for truth, information, or knowledge; research; scrutiny.—SYN. of 'inquiry': interrogation; interrogatory; query; investigation; inquest; examination; search; inquisition.

INQUIRENDO, n. *ĭn-quīr-ĕn'dō:* in *law*, authority given in general to some person or persons, to inquire into something for the benefit of the government or the people.

INQUIRY, WRIT OF, in Law: writ obtained by a plaintiff in a case where the defendant has let proceedings go by default, and an interlocutory judgment has been given for damages generally, the precise amount of which is beyond the knowledge of the court. The writ requires that the sheriff of the county in which the venue is laid shall summon a jury of 12 men who shall inquire into the amount of damage the plaintiff has sustained, and assess a definite amount. The sheriff sitting as a judge certifies to the inquisition when made, and places it before the court, by whom alone final judgment thereupon is given. It is also used when a demurrer is determined for the plaintiff on an action wherein damages are recovered, and in some cases when a writ of injunction or mandamus has been issued.

INQUISITION, n. *ĭn'kwĭ-zĭsh'ŭn* [F. *inquisition*—from L. *inquisītĭōnem*, a seeking or searching for—from *in*, into; *quæsītus*, sought for: Sp. *inquisizione*]: court or tribunal for discovery, examination, and punishment of heretics and offenders against religion; formerly established in some Rom. Cath. countries, particularly at Rome; judicial inquiry. IN'QUISI'TIONAL, a. *-ŭn-ăl*, or IN'QUISI'TIONARY, a. *-ĕr-ĭ*, making or busy in inquiry. INQUIS'ITOR, n. *-tĕr* [L. *inquisītor*]: a member of the court of inquisition in some Rom. Cath. countries. INQUIS'ITO'RIAL, a. *-tō'rĭ-ăl*, with the prying eye and severity of an inquisitor. INQUIS'ITO'RIALLY, ad. *-lĭ*.

*The Inquisition*, in the Rom. Cath. Church, is called the *Holy Office*. From the first establishment of Christianity as the religion of the Roman Empire, laws, more

or less severe, existed as in most of the ancient religions, for repression and punishment of dissent from the national creed; and the emperors Theodosius and Justinian appointed officials called 'inquisitors,' whose special duty it was to discover and to prosecute before the civil tribunals offenses of this class. The ecclesiastical cognizance of heresy, and its punishment by spiritual censures, belonged to the bishop or the episcopal synod; but no special machinery for the purpose was devised, until the spread, in the 11th and 12th c. of certain sects reputed dangerous alike to the state and to the church—the Cathari, Waldenses, and Albigenses—excited the alarm of the civil as well as of the ecclesiastical authorities. To the public mind of that day, heresy was a crime against the state, no less than against the church. An extraordinary commission was sent by Pope Innocent III. into s. France, to aid the local authorities in checking the spread of the Albigensian heresy. The fourth Lateran Council (1215) earnestly impressed, both on bishops and on magistrates, the necessity of increased vigilance againt heresy; and a council at Toulouse directed that in each parish the priest, and two or three laymen of good repute, should be appointed to examine and report to the bishop all such offenses discovered within the district.

So far, however, there was no *permanent* court distinct from those of the bishops; but under Innocent IV., 1248, a special tribunal for the purpose was instituted, the chief direction of which was vested in the then recently established Dominican Order. The inquisition thus constituted became a general, instead of, as previously, a local tribunal; and it was introduced in succession into Italy, Spain, Germany, and the southern provinces of France. So long, moreover, as this constitution remained, it must be regarded as a strictly papal tribunal. Accordingly, over the French and German inquisition of the following century the popes, exercised full authority, receiving appeals against the rigor of local tribunals (Fleury, v. 266), and censuring, 'or even depriving', the inquisitor for undue severity (*ibid.* 303). In France the inquisition was discontinued under Philip the Handsome; and though an attempt was made under Henry II. to revive it against the Huguenots, the effort was unsuccessful. In Germany, on the appearance of the Beghards (see BEGUINES), in the beginning of the 14th c., the inquisition came into active operation, and inquisitors for Germany were named at intervals by various popes, as Urban V., Gregory XI., Boniface IX., Innocent VIII., down to the Reformation, when it fell into disuse. In England, it was never received, all the proceedings against heresy being reserved to the ordinary tribunals. In Poland, though established 1327, it had only a brief existence.

It is the history of the inquisition as it existed in

Spain, Portugal, and their dependencies, that has almost absorbed entirely the real interest of this painful subject. As an ordinary tribunal similar to those of other countries, it had existed in Spain from an early period. Its functions, however, in those times were little more than nominal; but early in the reign of Ferdinand and Isabella, in consequence of the alarms created by the alleged discovery of a plot among the Jews and the Jewish converts—who had been required either to emigrate or to conform to Christianity—to overthrow the government, an application was made to Pope Sixtus IV., to permit its reorganization (1478); but in reviving the tribunal, the crown assumed to itself the right of appointing the inquisitors, and, in truth, of controlling the entire action of the tribunal. From this date forward Rom. Cath. writers regard the Spanish inquisition as a state tribunal, a character recognized by Ranke, Guizot, Lee, and even the great anti-papal authority, Llorente; and in dissociating the church generally, and the Roman see itself, from that state tribunal, Rom. Catholics refer to the bulls of the pope, Sixtus IV., protesting against it. Notwithstanding this protest, however, the Spanish crown maintained its assumption. Inquisitors were appointed, and 1483, the tribunal commenced its terrible career, under Thomas de Torquemada. The popes, feeling their protest unsuccessful, were compelled, from considerations of prudence, to tolerate what they were powerless to suppress; but several papal enactments are enumerated by Rom. Catholics, the object of which was to control the arbitrary action of the tribunal, and to mitigate the rigor and injustice of its proceedings. Unhappily, these measures were ineffective to control the fanatical activity of the local judges. The number of victims, as stated by Llorente, the popular historian of the inquisition, is positively appalling. He affirms that during the 16 years of Torquemada's tenure of office, nearly 9,000 were condemned to the flames. The second head of the inquisition, Diego Deza, in eight years, according to the same writer, put above 1,600 to a similar death; and so for the successive inquisitors-general. But Rom. Cath. loudly protested against the credibility of these fearful allegations. It is possible not to see that Llorente was a violent partisan; and it is alleged that in his work on the Basque Provinces, he had already proved himself a venal and unscrupulous fabricator. Although, therefore, he has made it impossible to disprove his accuracy by appealing to the original papers, which he himself destroyed, yet his Rom. Cath. critics—as Hefele in his *Life of Cardinal Ximenes*—have produced from his own work many examples of contradictory and exaggerated statements; Prescott in his *Ferdinand and Isabella* (iii. 467–470), has pointed out many similar instances; Ranke does not hesitate (*Fürsten und Völker*

*der Süd. Europas,* i. 242) to impeach his honesty; and Prescott pronounces his 'computations greatly exaggerated,' and his 'estimates most improbable' (iii. 468). Still, with all the deductions which it is possible to make, the working of the inquisition in Spain and its dependencies even in the new world, involves an amount of cruelty which it is impossible to contemplate without horror. When it was attempted to introduce it into Naples, Pope Paul III., 1546, exhorted the Neapolitans to resist its introduction, 'because it was excessively severe, and refused to moderate its rigor by the example of the Roman tribunal (Llorente, ii. 147).' Pius IV., 1563, addressed a similar exortation on the same ground to the Milanese (*ibid.* ii. 237); and even the most bigoted Rom. Catholics unanimously confess and repudiate the barbarities which dishonored religion by assuming its semblance and its name.

The procedure of the inquisition was a triumph of diabolical ingenuity. The party suspected of heresy or denounced as guilty, was liable to be arrested and detained in prison, to be brought to trial only when it might seem fit to his judges. The proceedings were conducted secretly. He was not confronted with his accusers, nor were their names even then made known to him. The evidence of an accomplice was admissible, and the accused himself was liable to be put to the torture, in order to extort a confession of his guilt. The punishments to which, if found guilty, he was liable, were death by fire, as exemplified in the terrible Auto da Fé (q.v.), or on the scaffold, imprisonment in the galleys for life or for a limited period, forfeiture of property, civil infamy, and in minor cases retractation and public penance. This form of procedure is strangely at variance with modern ideas; but it is fair to recollect that some of the usages were the ordinary procedures in all the courts of the age, civil or ecclesiastical.

The rigor of the Spanish inquisition abated in the latter part of the 17th century. In the reign of Charles III., it was forbidden to punish capitally without the royal warrant; and in 1770 the royal authority was required as a condition even for an arrest. From 1808, under King Joseph Bonaparte, the inquisition was suppressed until the Restoration; it was again suppressed on the establishment of the constitution 1820; but it was partially restored 1825; nor was it till 1834–5 that it was finally abolished in Spain, its property being applied to the liquidation of the national debt.

The inquisition was established in Portugal 1557, and its jurisdiction was extended to the Portuguese colonies in India. The rigor of its processes, however, was much mitigated in the 18th century, and under John VI. it fell altogether into disuse.

The inquisition in Rome and the Papal States never ceased. from the time of its establishment to exercise a

severe and watchful control over heresy, or the suspicion of heresy, which offense was punished by imprisonment and civil disabilities; but of capital sentences for heresy, the history of the Roman inquisition presents few instances, and, according to Balmez (*On Civilization*, p. 156), that tribunal 'has never been known to order the execution of a capital sentence' for the crime of heresy. The tribunal still exists under the direction of a congregation; but its action is confined to the examination of books and the trial of ecclesiastical offenses, and questions of church law; and since the Italian occupation of Rome 1870 its supreme jurisdiction is limited to the Vatican. It has zealous defenders in Germany as well as Spain and Belgium, and some desire its re-establishment. See Llorente's *Istoria Critica de la Inquisicion;* Prescott's *Ferdinand and Isabella;* Hefele's *Cardinal Ximenes;* Balmez, *Catholicism and Protestantism;* Hoffman, *Geschichte der Inquisition* (1878); Molinier, *L'Inquisition* (1880).

INQUISI'TION, in Law: return or report by a sheriff or coroner as to the finding of a jury on matters inquired into.

INQUISITIVE, a. *ĭn-kwĭz'ĭ-tĭv* [L. *inquisītus*, searched for—from *in*, into; *quæsītus*, sought for]: apt to ask questions; curious; prying; inquiring. INQUIS'ITIVELY, ad. *-lĭ*. INQUIS'ITIVENESS, n. curiosity to learn what is not known.

IN RE, *ĭn rē* [L.]: in the thing; in the matter of.

IN REM, in Law: proceedings instituted against a thing or piece of property to obtain decrees or judgments; usually in courts of admiralty and in actions under revenue laws; and such proceedings are confined to the property made the subject of the claim: thus courts of admiralty enforce the performance of a contract, when its performance is secured by a maritime lien or privilege, by seizing the object on which the lien is given. The difference between actions *in rem* and those *in personam* is illustrated by the case of a sailor suing for wages. He may proceed *in rem* against the ship or its freight, usually the quickest mode of recovery; or *in personam* against the master or owners. In courts of general jurisdiction the proceedings are most commonly *in personam*, and after judgment all the property of the person is liable to sale on the levy of an execution. A judgment *in rem* is generally binding on all parties in the cause as well as on all others interested with them in the thing.

INROAD, n. *ĭn'rōd* [*in*, and *road:* Scot. *raid;* AS. *rád*, a riding]: encroachment; a sudden invasion.—SYN.: invasion; incursion; irruption; intrusion; entrance; attack.

INSABBATATI, n. *ĭn-săb-ba-tā'tī* [mod. L. marked on their sabots; *in*, on; F. *sabot*, a wooden shoe]: in *eccles.*

*and chh hist.*, name sometimes given to the Waldenses in the 12th c., because some of them put the sign of the cross on their wooden shoes; also called Sabbatati.

INSALIVATION, n. *ĭn'săl-ĭ-vā'shŭn* [L. *in*, into; *salīva*, spittle]: the mingling of saliva with the food in the act of mastication.

INSALUBRIOUS, a. *ĭn'să-lô'brĭ-ŭs* [*in*, not, and *salubrious:* It. and F. *insalubre*, unhealthful—from L. *insălūbris*, unwholesome]: unfavorable to health; unwholesome. INSALUBRITY, n. *ĭn'să-lô'brĭ-tĭ* [F. *insalubrité*]: unhealthiness.

INSALUTARY, n. *ĭn-săl'ū-tĕr-ĭ* [*in*, not, and *salutary*]: not favorable to health.

INSANE, a. *ĭn-sān'* [L. *ĭnsānŭs*, unsound in mind—from *in*, not; *sānus*, sound: It. *insano*]: deranged in mind; mad; crazy; wild or rashly conceived, as a project or action; in *OE.*, making mad. THE INSANE, those who are deranged in mind. INSANE'LY, ad. *-lĭ*. INSANITY, n. *ĭn-săn'-ĭ-tĭ* [L. *insānĭtas*], or INSANE'NESS, n. *-nĕs*, mental aberrations of various kinds and degrees, in which the patients are in certain respects incapable of self-control, resulting from diseased conditions of body, either organic or functional, as their proximate causes; unsoundness in mind; any degree of mental derangement.—SYN. of 'insanity': lunacy; madness; derangement; aberration; mania; deliriun; dementia; frenzy; monomania; alienation; idiocy.

INSANE ASYLUMS, COTTAGE SYSTEM, or VILLAGE PLAN: a form of construction for insane asylums and charitable institutions, now much in vogue, in which large and imposing buildings are replaced by detached cottages. The cottages vary in size from those which accommodate six to a dozen patients to larger ones which will accommodate 20 or more. They are usually constructed either in groups or along streets and avenues as a village. In the former, the several groups are given up to a particular industry as a farm group, where the patients are employed at farming, and others, as the garden, the brick yard, shop industries, etc. In the village plan the institution is laid off in streets and avenues, and has the appearance of an ordinary village. In either plan, there is located near the centre of the plant an administration building, a hospital, a bakery, a laundry, and other utility buildings. Some of the institutions so constructed are Alt-Scherbitz near Leipsic; Gabersee near Munich, Germany; the Saint Lawrence State Hospital at Ogdensburg, N. Y., and the Craig Colony for Epileptics at Sonyea, N. Y.

INSANITY: this is a state of mental abnormality which can be better conceived of than defined, for no definition can be comprehensive enough to embrace all the multitudinous forms of mental aberration at the same time excluding those slight deviations from the

normal which are called eccentricity, or even unsoundness of mind, and yet do not amount to actual insanity. Savage defines insanity as 'such a disorder or disease of the nervous system as prevents the individual from reacting normally as a member of the society to which by birth and education he belongs;' and from this he distinguishes unsoundness of mind which 'may arise from some defect of the nervous system which interferes in a minor degree with the normal reaction of the patient to his circumstances, but which need not affect his social life in any important way or degree.' A definition of insanity essayed by Chapin is: 'That mental condition characterized by a prolonged change in the usual manner of thinking, acting, and feeling, the result of disease or mental degeneration.'

The various attempts at a classification of insanity differ as widely, and are on the whole as unsatisfactory, as the definitions. Most of them are too technical for the non-professional reader. The simplest classification is perhaps that suggested by Clouston and Mercier, which is as follows: 1. State of mental weakness: (*a*) primary —idiocy and imbecility; (*b*) secondary—dementia. 2. Stupor. 3. Depression. 4. Exaltation and excitement. 5. Delusions and hallucinations. 6. Impulsive and moral insanity. 7. General paralysis. The following arrangement is in no sense scientific, but may serve to give an idea of what insanity is, as well perhaps as an elaborate definition could do.

Affections of the Intellectual Powers.—*Idiocy*, non-development of one or more faculties. *Imbecility*, imperfect development of one or more faculties. *Fatuity*, or *Dementia*, deprivation by disease, or age, or otherwise, of powers which have been developed. *Mania*, with delusion, excitement, and irregular action of all the powers, especially of the intellectual powers; accompanied by errors connected with the special senses, (hallucinations and delusions).

Affections of the Sentiments.—*Melancholia*, exaltation of grief, penitence, and anxiety. *Monomania of fear*, exaltation of cautiousness. *Monomania of egotism*, exaltation of self-esteem. *Monomania of superstition*, exaltation of the sense of awe, devotion, and the marvellous. *Monomania of suspicion*, exaltation of jealousy, envy, want of confidence. *Monomania of vanity*, exaltation of craving for applause, grandeur, of feeling of ambition. *Emotional insanity.*

Affections of Propensities.—*Dipsomania*, incontrollable craving for stimulants. *Homicidal mania*, impulsive desire to destroy life. *Kleptomania*, incontrollable desire to acquire.

This catalogue is not exhaustive. The departures from health will correspond not merely with the primitive mental powers and instincts, but with every possible combination of these, and with such complications as

may result from hereditary predispositions, innate peculiarities, education, and habit.

The causes of insanity are predisposing (heredity, inborn instability of the nervous system) and exciting (physical or psychical causes). Among the physical causes which may precipitate an attack of insanity in the predisposed are: fatigue from overwork with insufficient hours of sleep; injury to the brain; sunstroke; insufficient food and privation of all kinds; changes incident to various periods—puberty, change of life, old age; pregnancy, the lying-in period and lactation; uterine and ovarian disorders; fevers; inflammation of the brain or its membranes; chronic poisoning—alcohol, opium, cocaine, etc., lead-poisoning, autointoxication from the intestine or disease of the thyroid gland, etc. The chief psychical causes are worry from domestic troubles, business difficulties, etc.; fright and mental shocks; unrequited or disappointed love; uncontrolled religious exaltation.

INSATIABLE, a. *ĭn-sā'shĭ-ă-bl* [F. *insatiable*—from L. *insătĭābĭlĭs*, not to be satisfied—from *in*, not; *sătĭō*, I satisfy or glut]: incapable of being satisfied or appeased; very greedy. INSA'TIABLY, ad. *-blĭ*. INSA'TIABIL'ITY, n. *-bĭl'ĭ-tĭ* [F. *insatiabilité*], or INSA'TIABLENESS, n. *-bl-nĕs*, a greediness that cannot be satisfied. INSA'TIATE, a. *-shĭ-āt*, not to be satisfied. INSA'TIATELY, ad. *-lĭ*. IN'SATI'ETY, n. *-să-tī'ĭ-tĭ*, state of being unstatiated.

INSCRIBE, v. *ĭn-skrīb'* [L. *inscrībĕrĕ*, to write upon—from *in*, on; *scrībō*, I write: F. *inscrire*, to inscribe]: to write or engrave on anything; to assign or address to; to dedicate to; to draw one figure within another. INSCRI'BING, imp. INSCRIBED', pp. *-skrībd'*. INSCRI'BER, n. one who. INSCRI'BABLE, a. *-bă-bl*, that may be inscribed.

INSCRIPTION, n. *ĭn-skrĭp'shŭn* [F. *inscription*—from L. *inscriptĭōnem*—from *in*, on; *scriptus*, written]: words written or sculptured on a monument, tomb, or building (see INSCRIPTIONS, below): words placed in the centre of a coin or medal on one face—those placed in the circle near the rim being called the *legend:* something written or printed on a book, as a mark of respect or as an informal dedication. INSCRIP'TIVE, a. *-tĭv*, bearing an inscription.

INSCRIPTIONS: writings by words or signs, which were engraved or painted on monuments or any durable material (not of the class of books), such as metals, stones, and other substances. They form a class of documents of the highest interest and importance to history, philology, and archæology, so that a broad consideration of them embraces the whole scope of history, language, and art. A study along either of these three lines will lead to inscriptions, as their ultimate source of information. In the case of many of the peoples of antiquity, the inscriptions have proved to be almost the

only source of our knowledge about their earliest history, language, and customs. This is particularly the case with Babylonia, Assyria, ancient Persia, and even Egypt in a very large degree. In the instance of the Lycian, Phrygian, and Etruscan languages, the body of inscription is the absolutely only means of knowing about them. The term, inscription, has been applied in a very wide sense so as to include even the hieroglyphic writings of Central America and Mexico, as also the picture-writings of the aboriginal inhabitants of North America but all these are either as yet undeciphered or of no historical or linguistic importance. Therefore, in its more technical interpretation, this term is applied to those monumental and other documents which have a bearing on the history and language of Asia, Europe, and Africa. Before the invention of paper or other light substance for recording events, public acts, devotions, and other documents were inscribed on bronze, or lead, or stone; gold plates were inscribed and placed in foundations or walls; metallic ornaments and dishes were inscribed with charms, or amulets, or other formulæ; grave-stones, mile-stones, or other stone monuments were engraved with facts pertaining to their emplacement. From these various sources have come the great body of inscriptions, which amount to probably half a million and deal with every side of public and private life among those ancient peoples. Of those inscriptions, which are classed among the oldest, are some found in China. Little is as yet known about them, so that scholars differ concerning the degree of their antiquity, some putting them at 1200 B.C. while others claim that they date from 2278 B.C. They come down to a late period, some of them being in the 8th century A.D. A treatment on inscriptions divides itself into five sections, as follows:

I. Probably the earliest are some of the Egyptian Inscriptions (see EGYPT: HIEROGLYPHICS). They belong to the hieroglyphic system of writing, and the most ancient monuments here possibly go back to the third dynasty above 2,000 years B.C. The key that paved the way in the deciphering of these inscriptions is the Rosetta Stone (2d century B.C.), which is now in the British Museum. It is a decree written in hieroglyphic, demotic, and Greek, of which the last easily aided in translating the others. Other bilingual and trilingual inscriptions have greatly assisted in unlocking the secrets of the hieroglyphics. The latest of this class is dated about 250 A.D.

II. The Semitic inscriptions stand next chronologically. For practical purposes this name is limited to those inscriptions which were written in the systems of alphabetic writing developed by the Semites. There are two classes; (a) Those of the Accadian period in Assyria and Babylonia, reaching nearly as high an antiquity as

the Egyptian, as they approximate 2,000 B.C. in their earliest forms, although some date them only from 1,200 B.C. They are cuneiform (see CUNEIFORM) and show, in succeeding stages, a regular development in the breaking down from the hieroglyphic into the syllabic system of writing. For a bibliography and more extended description, see CUNEIFORM. (b) The Phœnician, of which the earliest is the stele of Mesha, king of Moab, of about the 9th century B.C.; and the Persian and Median, with their earliest documents reaching to the 6th century B.C. There is a large number of published inscriptions of this section, but they are generally brief records from gravestones or isolated names or even graffiti. They lack the interesting variety of the Greek or Latin records, but wider investigations may remove this lack. They are in the Phœnician alphabet and types of them are traced through a wide territory, running from Mesopotamia to Spain and along both sides of the Mediterranean. They show much variety of linguistic forms, as Phœnician or ARAMAIC or bilingual with Greek and other languages or even, in the far West, Neo-Punic. They continue also until about the Christian era. The old Persian inscriptions are largely royal documents. The one found at Behistun (see BEHISTUN) is the longest and most typical; it narrates the very interesting events in the life and career of Darius I. The other inscriptions are no less valuable, as they deal with the reigns of his successors. The dedicatory tablets have a deep, genuine religious spirit and are influenced in style and diction by the tablets of the Accadian period of the Assyro-Babylonian inscriptions. The bibliography is: *Corpus Inscriptionum Semiticarum* (Paris 1881 seq.); Tolman, *Persian Inscriptions* (New York 1892); Weissbach and Bang, *Altpersische Keilinschriften* (Leipzig 1893); Holdewey, *Die Lettitische Inscrift gefunden in der Königsburg von Babylon* (Leipzig 1900); Hommel, *Südarabische Chrestomathie* (Munich 1893); Price, *The Monuments and the Old Testament* (Chicago 1905); Clay, *Light on the Old Testament from Babel* (Philadelphia 1907); Weber, *Studien zur Südarabischen Altertumskunde* (Berlin 1901); Weber, *Arabien vor dem Islam* (Leipzig 1902); D. H. Müller, *Epigraphische Denkmäler aus Arabien* (Vienna 1889); Littmann, *Zur Entzifferung der Safa-Inschriften* (Leipzig 1901); Lidzbarski, *Handbuch der Nordsemitischen Epigraphik* (Weimar 1898).

The inscriptions of the Semitics are much fewer than those of the Greeks and Romans, both of whom were accustomed to make epigraphic records of all documents that should be brought or kept before the public. There are about 75,000 Greek inscriptions, and about 150,000 of the Latin; each list is growing annually, as explorations are being pushed.

III. The Greek inscriptions appear from about the 7th

century B.C. The earliest ones are those cut in the rocks on the island of Thera, of the 7th century B.C. Then came the names of Greek mercenaries in Egypt, carved on the colossi at Abu-Simbel, of the same century. Still, few documents of length or value antedate the Persian wars of the 5th century B.C. From then the body of Greek inscriptions grows rapidly in volume, length, and historical importance, and continued down to late Byzantine times. The Greeks used chiefly marble on which to engrave their public documents and so their remains of this character are more numerous and richer than of the Roman who used bronze only. The public inscriptions embrace decrees, ordinances, treaties, magisterial lists and records of boards. The private inscriptions touch upon every phase of domestic, family, artisan, and commercial life. They were usually put up in theaters, temples, or along public roads; temples were most popular for such purposes so that great numbers have been excavated on the sites at Delphi and Olympia. At Athens the favorite spots were the Parthenon and Acropolis. The factors used in dating an inscription are internal evidence of the subject, persons, events treated of, the character of the dialect and language, and especially the form of the letters and style of execution. A systematic collection and use of inscriptions began among the Greeks themselves at the end of the 4th century B.C. Modern work along this line began in the 15th century A.D., when scholars became interested in Greek epigraphy. In 1603 appeared the first attempt at a complete collection of inscriptions, the 'Inscriptionæ Antiquæ Sotius Urbi Romani,' by I. Gruter, in which the Greek were secondary in number to the Latin. In 1815 the Berlin Academy gave the task of producing a distinctly Greek collection to August Boeckh, and in 1825 came out the first part of volume I of the 'Corpus Inscriptionum Graecarum' and the volume was completed in 1828. Each year still adds to this collection, so that it is still in process of production. The bibliography is: Sadee, *De Bocotiae Situlorum Dialecto* (Halle 1903); Bourguet, *De rebus Delphicis imperatoriae actatis capita duo* (Montepessulano 1905); Michel, *Recueil d'Inscriptions Grecques* (Brussels 1900); Hicks and Hill, *Manual of Greek Historical Inscriptions* (2d ed. Oxford 1901); Dittenberger, *Sylloge inscriptionum Graecarum* (2d ed. 3 Vols. Leipzig 1898–1901); Larfeld, *Handbuch der griechischen Epigraphik* (Leipzig 1898, 1902), Larfeld in Müller's *Handbuch der Klassischen Altertumswissenschaft* (Vol. I. Munich 1892); Roberts, *An Introduction to Greek Epigraphy* (Cambridge 1887); Newton's essay *On Greek Inscriptions* in *Essays on Art and Archæology* (London 1880).

IV. Latin inscriptions, in their Etruscan division, date from the 6th century B.C. but the purely Latin division, in its earliest examples, begin probably from about 300

B.C. The generally accepted earliest one is on a golden brooch found at Praeneste and probably is of the 6th century. The inscription on the broken column in the Roman Forum is placed in the early list. In most of the early examples the inscription is merely a name of the donor or of some god to whom the article was dedicated. With very few exceptions the Latin inscriptions do not antedate 300 B.C.; those of the most value begin with the Scipionic epitaphs, of about 280 B.C. The inscriptions are either painted or carved. Scholars divide them into (1) Tituli, as dedicatory, mortuary, or honorary; and (2) Acta, documents engraved for purposes of publication. The donor of a temple or other public edifice was generally permitted to have his name engraved upon it; such Tituli constitute a most valuable class of inscriptions. In the Acta, bronze was usually employed till Augustus' time when marble was generally adopted for them; they deal with all official, governmental, and legislative lines of activity. A particularly important inscription is the Monumentum Ancyranum, an account of Augustus of his deeds, in Greek and Latin, engraved on the walls of a temple at Ancyra in Asia Minor (see Fairley, Monumentum Ancyranum, Philadelphia 1898). While the Roman orators and historians refer to inscriptions, yet the Romans did not collect them, as the Greeks did. In the 8th and 9th centuries A.D., when many were traveling to Rome, casual copies of inscriptions were made and brought to Western Europe. With the exception of the brief epigraphic work of Cola di Rienzi (1344 A.D.), it remained for the scholarly Poggio Bracciolini in the early 15th century to pave the way for collecting them. The real founder of the study of Latin epigraphy was Bartolomeo Borghesi (1850). In 1863 came the first volume of the Corpus Inscriptionum Latinarum, edited by Theodore Mommsen and Wilhelm Henzen, which aims to be complete in fifteen volumes, with many supplements; this great work is still in the making. The bibliography is: Egbert's, *Introduction to the Study of Latin Inscriptions* (New York 1896); W. M. Lindsay, *Handbook of Latin Inscriptions* (London and Boston 1897); Cognat, *Cours élémentaire d'epigraphie latine*, (3d ed. Paris 1898); Rushforth, *Latin Historical Inscriptions*, (Oxford 1893); Dessan, *Inscriptiones Latinae Selectae*, (Berlin 1892–1902); Wilmanns, *Exempla Inscriptionum Latinarum* (Berlin 1873).

V. Inscriptions of India, owing to the known antiquity of the ancient Sanskrit, were supposed at first by investigators to ascend to a very early date. But a more thorough study of them has shown that they belong to a comparatively modern era, as they date only from the religious edicts of King Piyadasi, about 250–300 B.C. Therefore the epigraphic history of India does not antedate that of Italy. As yet, no work of special moment has been given to these inscriptions, so that no reliable bibliography has been developed.

INSCRUTABLE, a. *ĭn-skrô′tă-bl* [F. *inscrutable*, inscrutable—from L. *inscrutābĭlĭs*—from *in*, not; *scrūtor*, I search]: that cannot be searched into and understood by man; impenetrable. INSCRU′TABLY, ad. *-blĭ*. INSCRU′TABLENESS, n. *-bl-nĕs*, or INSCRU′TABIL′ITY, n. *-bĭl′ĭ-tĭ*, quality of being inscrutable.

INSCULP, v. *ĭn-skŭlp′* [L. *in*, in or on; *sculptus*, carved or cut]: in *OE.*, to engrave; to cut. INSCULP′ING, imp. INSCULPED, or INSCULPT, pp. *-ĭn-skŭlpt′*. INSCULPTURE, *ĭn-skŭlp′tūr*, or *-chûr*, in *OE.*, anything engraved.

INSEAM, v. *ĭn-sēm′* [*in*, into, and *seam*]: to impress or mark with a seam or cicatrix.

INSECT, n. *ĭn′sĕkt* [F. *insecte*—from L. *insec′tus*, cut into; *insec′ta*, things cut into, insects—from *in*, into; *sĕcō*, I cut: Sp. *insecto*]: general name for a small creeping or flying animal, such as the fly, bee or bug, so named because the bodies of many of them are cut or almost divided into parts. INSECTED, a. *ĭn-sĕk′tĕd*, divided into sections, like an insect. INSEC′TICIDE, n. *-tĭ′sīd* [L. *cædĕrĕ*, to cut or kill]: that which kills or destroys insects. INSECTILE, a. *ĭn-sĕk′tīl*, having the nature of insects. INSEC′TION, n. *-shŭn*, a cutting into. INSECTA, n. plu. *ĭn-sĕk′tă*, the class of articulate animals commonly known as insects (q.v.).

INSECTICIDES, *in-sĕk′tĭ-sīdz*, AND FUNGICIDES, *fŭn′jĭ-sīdz:* articles or compounds, the former used to repel or destroy insects; and the latter to prevent or check the progress of fungous diseases. Destructive insecticides are usually, though not universally, employed in the form of a powder or spray when directed against leaf-eating insects, and as a spray or fume when combating those that suck their food. In the former case the food supply of the insects is poisoned; in the latter the pests are destroyed by suffocation. Vapor and gas are also used to destroy certain classes of insects. Repellant substances are used in the form of powder or as washes. Various mechanical means are also employed to destroy or prevent the attacks of injurious insects. Fungicides are usually employed in the form of a spray. Under some conditions an insecticide is combined with a fungicide and thus, by a single application, the plant or tree is protected against two classes of enemies. For the application of materials in the form of a spray there are numerous machines, called sprayers or spraying pumps. Some are carried on the back, others are mounted on handbarrows, and many are drawn by horses. In any case the liquid is discharged by means of a force pump. For low-growing plants in gardens and small fields a common watering pot with a rose nozzle is often used; and the application of the poisonous solution is sometimes made with a whisk broom. For the application of dry materials there are various forms of 'powder guns,' bellows, and dusters.

The number of insecticides and fungicides which have

been tested is very large. Some have been greatly modified in their composition, and others have been discarded. Those which are described are standard preparations. Most of them have been endorsed and the formulas published by one or more of the State Agricultural Experiment Stations or by the Department of Agriculture at Washington. For specific remedies for many of the more important insect pests see INSECTS.—*Injurious Insects*.

INSECTICIDES'. *Arsenate of Lead.*—Use at the rate of 3 lbs. to 50 gal. of water. (To destroy insects that suck the sap of plants.)

*Benzine.*—Used as a spray, principally for insects found in buildings. Must not be used near a flame, and no light should be carried into a room in which it has been used until the odor disappears.

*Bisulphide of Carbon.*—To destroy insects in grain, place in a shallow open vessel on top of the grain, and close the bin tightly. One oz. is sufficient for 100 lbs. of grain. For root lice, pour a teaspoonful into a hole near the plant and cover at once. This substance is inflammable and explosive. Its fumes must not be breathed and the same precautions in regard to fire as are noted for benzine should be observed.

*Carbolic Acid Emulsion.*—This is used as a spray to destroy eggs and maggots. It is made by dissolving 1 lb. of hard soap or 1 qt. of soft soap in 1 gal. of boiling water, adding 1 pt. of crude carbolic acid and agitating till an emulsion is formed. Before using, one part of this emulsion should be diluted with 25 or 30 equal parts of water.

*Hellebore.*—This substance is very effective in destroying the currant worm and similar insects. It can be dusted upon the leaves as a dry powder, diluted with 4 times its bulk of flower, or used as a liquid. One oz. of the fresh powder to 3 gals. of water makes a mixture of sufficient strength.

*Kerosene and Milk Emulsion.*—This is made by adding 1 gal. of sour milk to 2 gals. of kerosene and agitating until a creamy mass results. If sweet milk is used a little vinegar must be added.

*Kerosene and Soap Emulsion.*—Dissolve $\frac{1}{2}$ lb. hard soap in 1 gal. of water (preferably soft water) and while still boiling hot, remove from the fire and add 2 gal. of kerosene. Stir the mixture violently by driving it through a force pump back into the vessel, until it becomes a creamy mass that will not separate. This requires from 5 to 10 min. It is then ready to be diluted with water and applied. For hard-bodied insects, like the chinch bug, use 1 part emulsion to 8 or 10 parts water. For plant lice, etc., use 1 part emulsion to 15 parts water.

*Lime and Sulphur Wash* (for San Jose Scale and other scale insects).—Winter treatment: Slack 50 lbs. stone lime in a little hot water gradually add 50 lbs. of ground sulphur and stir vigorously; boil 1 hour, strain, dilute with water to make 150 gal. of wash and apply. It corrodes brass and copper and if a pump with brass fittings

is used care should be taken to run clear water through it after each day's spraying. Never boil the wash in a copper kettle.

*Paris Green.*—This is an arsenical poison and one of the most efficient insecticides in use. It is employed for the leaf eating insects, and in the powder form is diluted and used in the same manner. As a spray it can be used at the rate of 1 lb. to 150 to 250 gals. of water—the weaker preparation for stone fruits and tender-leaved plants.

*Pyrethrum.*—This material is effective with a large number of insects. It should be fresh, or kept in air-tight packages. In the form of powder it can be used clear, or diluted with 3 to 6 times its bulk of air-slaked lime or flour. As a spray it should be used at the rate of 1 oz. to 3 gals. of water. It should stand for one day before it is used.

*Tobacco.*—As an insecticide this is used as a powder or as a decoction. It is of great value in greenhouses, gardens, and to destroy lice on domestic animals. The powder is sprinkled upon and around the plants to be protected. The decoction is made by boiling stems or refuse tobacco in water. One pound of tobacco is sufficient for two gallons of water. Enough cold water should be added to make up for evaporation during the process of boiling. The decoction is used as a spray.

*Whale Oil Soap.*—On foliage use at the rate of 1 lb. to 4 gal. of water; in winter 2 lbs. to 1 gal. of water should be applied.

Fungicides.—*Ammoniacal Copper Carbonate Solution.*—This is made by mixing 5 oz. copper carbonate with sufficient water to form a paste, which is to be completely dissolved in ammonia (26 per cent.). From 3 to 4 pts. will be required. This is to be diluted with 50 gals. of water. The mixing should be done in wooden vessels. This fungicide has proved valuable in preventing apple scab and various forms of mildew.

*Bordeaux Mixture.*—This is made by dissolving 6 lbs. copper sulphate (blue vitriol) in 16 gals. of water, slaking 4 lbs. of lime in 6 gals. of water, and straining the whitewash thus made into the copper solution, stirring thoroughly. It is to be made in wooden vessels and applied at once. In many instances the use of 4 lbs. of copper sulphate has given as good results as 6 lbs. For a weak solution the quantity of water is sometimes increased to 50 or 60 gals. This is one of the best fungicides known, and is very efficient in the treatment of various rots, blights, mildews, and rusts.

*Copper Sulphate Solution.*—This is made by simply dissolving copper sulphate in water. The strength may be varied with the character of the plants or trees to which it is applied. One lb. of the copper sulphate to 25 gals. of water can be used before the buds open. After the leaves appear 1 lb. to 250 gals .of water is sufficient.

*Corrosive Sublimate Solution.*—Used for potato scab. It is made by dissolving, in 2 gals. of hot water, 2¼ oz. of

corrosive sublimate (bichloride of mercury). After standing for 12 hours add 13 gals. of water. The seed potatoes are to be soaked in this solution for 1½ hours. The solution can be used repeatedly. It must not be used in metal vessels, and, as it is extremely poisonous, it must be kept where children and animals cannot get to it.

*Formalin.*—This material is sold as a 40 per cent. solution. For treating seeds and seed potatoes, sprinkle seed with formalin used at the rate of 1 lb. to 30 gal. of water. After standing over night spread out seed to dry before planting. Soak seed potatoes 2 hours in solution of same strength before planting.

Combined Insecticides and Fungicides.—*Bordeaux Mixture and Arsenites.*—Made by adding 4 oz. of Paris green or London purple to 50 gals. of Bordeaux mixture. This is used upon trees and plants for the double purpose of destroying insects and preventing or checking the progress of fungous diseases.

*Copper-arsenic Solution.*—Six oz. copper carbonate and 4 oz. of Paris green are mixed and dissolved in about 2 qts. of ammonia and added to 50 gallons of lime water, made by using as much lime as the water will dissolve.

In using insecticides or fungicides prompt action is of the utmost importance. With most of the liquid compounds used for these purposes it is necessary to keep the materials well stirred. Poisonous compounds should not be used upon fruits for about 4 weeks before they are ripe. Copper preparations should never be placed in iron or tin vessels: and Paris green or London purple should never be used with the sulphate of copper solution or with any compounds containing ammonia. A rain falling soon after the use of an insecticide or fungicide will make it necessary to renew the application. The spray should be fine and should reach every branch and leaf. Six qts. is an ample quantity for a tree of average size. For some diseases it is necessary to spray every two weeks until the plant is nearly mature or the fruit is well developed. The solid matter left upon fruit by the Bordeaux mixture can be removed by washing with vinegar and water—1 qt. of the former to 5 gals. of the latter.

INSECTIVORA, n. plu. *ĭn′sĕk-tĭv′ō-ră* [L. *insecta*, insects; *voro*, I devour]: order of the Mammalia (q.v.), that feed principally on insects: see Dobson's *Monograph of the Insectivora*, 1882–3. None of the I. are of large size; most of them are small timid creatures, generally nocturnal in their habits, and useful in the economy of nature chiefly in preventing the undue increase of worms and insects. Although many of them are not exclusively insectivorous, all of them have the summits of the molar teeth beset with small conical tubercles, as for the purpose of breaking up the hard coverings of insect prey. Their dentition is otherwise very different in the different families. Their legs are short. They all place the whole sole of the foot on the ground. The snout is generally

elongated. The families of *Talpidæ* (Moles, etc.), *Soricidæ* (Shrews, etc.), *Erinaceadæ* (Hedgehogs, etc.), and *Tupaidæ* (Banxrings) are referred to insectivora. The I., though in some respects very different from the *Cheiroptera*, show affinity to them in others. IN'SECTIV'OROUS, a. *-rŭs*, feeding on insects. INSECTIVOROUS PLANTS: see DIONÆA.

INSECTIV'OROUS BIRDS: birds which feed on insects In this class many different varieties are represented. Some of these make a much larger proportion of their diet of insects than others. Some also have special liking for those classes of insects which are either harmless or positively beneficial, while others choose the kinds injurious to fruits and to cultivated pilants. Insects are among the most destructive foes with which the farmers, gardeners, and fruit growers of this country have to contend. The annual loss to these classes caused by the depredations of insects is estimated by careful observers to be from $600,000,000 to $700,000,000, and appears to be rapidly increasing. On account of their nature and habits, as well as their immense numbers, insects are extremely difficult to control. Almost without exception our fruits and cultivated plants, our ornamental trees and shrubs, and even our flowers, are attacked by insects. I. B. are among the most destructive of the natural enemies of these pests. Each season insects in numbers beyond all human power of computation are destroyed by 'the voluntary police of our fields and gardens.' In many sections insects would utterly ruin the fruit and destroy the grain crops if they were not constantly kept in check by birds. Insects multiply with such enormous rapidity that if their increase were unchecked, they would in a few years become so numerous as to destroy plant life throughout the world.

It is objected to birds that they destroy beneficial insects as well as those which are injurious, and that they do much damage to both fruit and grain crops. While this is true to some extent, experience has proved that the evils caused by birds are not to be compared with those which they prevent. Wherever birds have been destroyed or driven away, insect depredations have quickly increased to an alarming extent. More than 200 kinds of insects find their homes in our orchards. When birds are expelled, great quantities of the fruit are destroyed and a large proportion of that which ripens is made defective by the attacks of insects, and in many cases the trees are defoliated, and thus seriously injured.

Many of our native and most popular song birds are insectivorous, and some varieties of birds which have neither sweetness of voice nor beauty of plumage are very useful in destroying insect enemies. The robin is one of the most efficient in destroying pernicious insects, though on account of its partiality to the various small fruits, it is not admired by producers of these crops. But in the spring and autumn robins destroy immense numbers

of injurious insects. They feed but little on insects useful to the farmer. The bluebird eats enormous quantities of insects, and discriminates but slightly between the different classes. It does but little injury to fruit. The brown thrush and the cat-bird feed on both insects and fruit, but are far less destructive to the latter than are the robins. The chickadee is particularly useful in orchards destroying both insects and their eggs. The cedar-bird, though feeding on fruit to some extent, is the special foe of the canker worm, and destroys other orchard pests. The woodpecker, while doing some harm, destroys numberless grubs and worms which infest fruit and ornamental trees. The cuckoo destroys many caterpillars. The kingbird feeds largely on insects, but is unpopular where bees are kept as, to a small extent, it includes them in its diet. The lark, yellow-bird, and quail eat insects, also grain and the seeds of various weeds. The rose-breasted grosbeak is very destructive to the Colorado potato-beetle, and is said to have largely increased in numbers in the central portion of the United States since the appearance of that pest. Some varieties of the sparrow are useful as insect destroyers, but the English sparrow does far more harm than good. Hawks and owls drive away some of the song birds, but destroy many insects which injure trees and crops. The smaller varieties of these birds are properly classed among the kinds useful to the farmer. The crow, though often shot for depredations in corn-fields, destroys numberless grubs and worms, and does much more good than harm.

In some states most of the birds named above are protected by statute, but during the small-fruit season the law against killing them is often violated. Their destruction is a short-sighted policy. Instead of killing them, the farmer should regard these, and similar birds, as among his most efficient allies. They should be protected from injury, furnished with food at times when the natural supply proves inadequate, and encouraged to make their homes in his fields and orchards.

IN'SECTS (*Insecta*): one of the classes of *Arthropoda* (see ARTICULATA), of the division having articulated members. All the Articulata having articulated members were included by Linnæus in the class of I.; but the *Crustacea* and *Arachnida* were soon separated from it, and afterward the *Myriapoda:* see these titles. This restricted application of the term I. corresponds more nearly with its popular use, and so well accords with its derivation, that it may be regarded as one of the most appropriate names in natural history. It is from a Latin word, signifying *cut into;* a derivation exactly answering to that of the Greek *entoma,* from which the science having insects for its subject receives the name of Entomology. Insects, a natural and extremely well defined class of organized beings, are remarkable, in their mature or *perfect* state, for the division of their bodies into three very distinct portions—the *head, thorax,* and *abdomen;* the divisions

being often so deep, that the slenderness to which the body is there reduced occasions surprise.

The body of an insect, as of all the other ARTHROPODA, is composed of a certain number of rings. One of these forms the head; or, if the head ought to be regarded as really composed of several rings, modified and condensed together, as the skull of vertebrate animals is formed of modified vertebræ, yet no distinction of rings appears. The eyes, the antennæ, and the organs of the mouth, are the most conspicuous organs connected with the head.

The thorax is formed of three rings, closely combined, but easily distinguishable. The first is the *prothorax;* the second, the *mesothorax;* the third, the *metathorax* [Gr. *pro,* before; *mesos,* middle; and *meta,* after]. Of these rings, one or another is often remarkably developed. The legs and wings are attached to the thorax. Insects have six legs, and generally four or two wings, never any other number; but some are wingless, and this is the case not only in all the insects of certain groups, but also in particular species of groups ordinarily winged, and is sometimes even a distinction of sex, as in the glow-worm. The first pair of legs are attached to the prothorax; the second, to the mesothorax; the third, to the metathorax. The first pair of wings are attached to the mesothorax; the second to the metathorax. In dipterous (two-winged) insects, the place of the second pair of wings is occupied by two small organs—little threads, terminated by a knob—called balancers (*halteres*), the use of which is not known.

The abdomen consists of nine rings, or of fewer; as some are often obliterated, or modified, to form various appendages. It contains the principal viscera. In it, the sexual organs are situated. The rings of the abdomen are much more separable and movable than those of the thorax. The terminal rings of the females of some groups form an oviduct or ovipositor, which is sometimes capable of being employed as a borer, to make a place for the eggs in the animal or vegetable organism destined to receive them, and which in wasps and bees is replaced by a sting.

The nervous system of I., in all their stages of existence, exhibits the general characters noticed as belonging to the *Articulata* (q.v.). There is a *brain,* or ganglion of the head, formed from 3 ganglia from which arise the nerves of the eyes, antennæ, and mouth.

The rings of which the body of an insect is composed appear most distinctly in the external covering. This is in most parts hard, but more or less flexible, of a horn-like substance, chiefly composed of *Chitine* (q.v.). The external covering of insects is the principal framework of their bodies, and to it the muscles are attached. The external covering of each ring is more or less distinctly divided into two parts—a dorsal and a ventral—the connection at the sides being effected by a softer and more flexible membrane, a still softer membrane connect-

ing the rings of the abdomen, so as to allow considerable freedom of motion; while on each ring are minute pores called *stigmata* or *spiracles*, by which air is admitted to the *tracheæ* or air-tubes (q.v.), the organs of respiration.

Insects respire neither by means of lungs nor by means of gills, and the blood is not brought to a particular part of the body for aëration, as by circulation in vertebrate and many invertebrate animals, but the air which enters by the breathing-pores is conveyed by tubes to all parts of the body, and even through the delicate structure of the wings, so that the whole frame is rendered more light by the very means employed to maintain and increase muscular energy. Respiration is extremely active in I.; they consume a great quantity of oxygen in proportion to their size, and they display in general an extraordinary degree of activity and muscular energy. The flight of very many kinds is far more rapid in proportion to their size than that of birds; others display a similar superiority of powers in running, swimming, or digging and burrowing: while the leaping of many, as fleas and grasshoppers, and the springing of others, as cheese-"skippers," prodigiously exceeds anything of which any vertebrate animal is capable. The respiration of most aquatic I. takes place in the same manner as that of other I., and they come to the surface of the water for fresh supplies of air.

The blood of I. is thin and colorless. It is not everywhere inclosed in vessels, but is freely diffused in interstices between the muscles and other organs, and in the visceral cavity. It contains globules or corpuscles of determinate shape. How far the *dorsal vessel* (see ARTICULATA) should be regarded as a *heart* is not fully determined; but by its contractions and dilatations, a constant motion of the blood is maintained.

The members of I. have generally a structure analogous to that of the skeleton, in being composed of articulations, the hard and solid part of which is the external covering. This appears very perfectly in the legs, the antennæ, and the palpi, but not in the wings.

The legs of I. consist of two principal parts, the thigh (*femur*) and shank (*tibia*), with two smaller articulations, the *coxa* and *trochanter*, interposed between the body and the thigh; and at the extremity of the shank, a set of one to four, or five small articutations, called the *tarsus*. The last segment of the tarsus in terrestrial I. is generally terminated by a pair of hooks or little claws; and many dipterous I., as the House-fly (q.v.), have discs and gland hairs for taking hold of smooth surfaces.

The wings of I. are often very large in proportion to the size of the body, and the rings of the thorax are soldered together, and supported by supplementary pieces, to give firm support to them, and to the powerful muscles necessary for their action. The hard covering of the body of an insect consists, like the skin of vertebrate animals, of three layers, and the membranes of the wings

are filmy expansions of the outermost of these, the epidermis. The ribs or nervures in the wings of I. are tubes, of which one of the uses is the conveying of air even to the extremities of the wings. The forms of the wings are very various; some of the more important diversities being characteristic of different orders. The bodies of I. are often very much covered with hairs, which are frequently very long and thick in proportion to the size of the animal, and on the wings of butterflies and other *Lepidoptera* are flattened and expanded so as to form scales (see BUTTERFLY), often richly colored; also, by reason of very fine parallel striæ, with which they are marked, displaying an admirable iridescence or reflection of evanescent pris-

Various Forms of Insects' Feet, showing the adhesive Discs or Suckers (highly magnified).

(Copied from Rymer Jones's *Animal Kingdom*.)

A, one of the middle pair of legs of Water-beetle; B, foot of *Bibio febrilis;* C, foot of House-fly; D, leg and foot of *Cimbex lutea;* E, tarsus of Abyssinian Grasshopper, showing hooks or leaping appendages; F, one of the anterior legs of Water-beetle.

matic colors in changing light. The first pair of wings in coleopterous I. or beetles is represented by a pair of hard chitinous *elytra* (Gr. coverings), or wing-covers. *Orthopterous* I. have softer leathery or parchment-like elytra.

Insects feed on very different kinds of food; some prey on other I., some devour animal and some vegetable substances, some suck the juices of animals, some the juices of plants or the honey of their flowers. The structure of the mouth varies accordingly, and the digestive organs also vary. The mouth is adapted either for gnawing, cutting, and tearing, or merely for sucking, or it is adapted partially for both of these purposes. The parts of a mandibulate mouth (see COLEOPTERA) are an upper

lip (*labrum*) and an under lip (*labium*), moving vertically; and an upper pair of jaws or mandibles (*mandibulæ*) and a lower pair of jaws (*maxillæ*), moving horizontally. The upper and under lip meet when the mouth is shut. Both are as hard as the jaws. The lower lip is sometimes regarded as consisting of two parts, called the chin (*mentum*), and the tongue (*lingua*), which is more membranous and fleshy, and reposes on the inside of the chin. The upper jaws or mandibles are usually powerful, and often strongly toothed and hooked, sometimes furnished with cutting edges like sharp scissors, and sometimes adapted for bruising and grinding. They are also the instruments which bees and other I. use for their wonderful operations of cutting, tearing, building, plastering, etc. The lower jaws or maxillæ are generally less powerful. In some I., in which the mandibles are enlarged into great organs of prehension, the maxillæ alone serve for the ordinary use of jaws in eating. To the maxillæ and the lower lip are attached organs called *palpi* or feelers, consisting of a number of minute articulations, supposed to be delicate organs of touch connected with the purposes of the mouth, and distinguished as *maxillary palpi* and *labial palpi.*

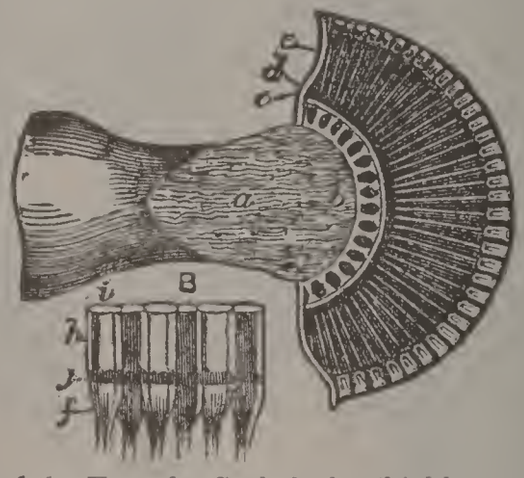
The suctorial mouth is modified from the mandibulate by various modifications of the parts and usually this may be found in some form in suctorial structure; thus the mandible and maxillæ are considered as represented in the piercing parts of the mouths of the bugs, mosquitoes or in the tubular structure found in butterflies, flies, etc. The sheath or proboscis usually represents the under lip or labium.

The alimentary canal of I. is usually more or less convoluted. Between the mouth and the proper digestive stomach, it sometimes exhibits a *crop* (honey-bag of bees) in I. which live by suction, and this is either a dilatation of the lower part of the gullet or a lateral vesicle; sometimes a *gizzard,* with muscular walls, often armed with horny pieces, for trituration of food. The stomach is of a very elongated form. The liver is represented by long slender bile-tubes, four or more in number, which wind around the intestine, and pour their secretion into it, where it originates from the stomach. The salivary glands are generally similar tubes.

The eyes of I. are of two kinds—*simple* or *stemmatic,* and *compound* or *composite:* see EYE. Some I. have only simple eyes (*ocelli*) some have only compound eyes; but the greater number have two large compound eyes on the sides of the head, and three small simple eyes between them. Compound eyes occur in I. only in their mature or perfect state; the eyes of larvæ are simple.

The Antennæ (q.v.) are generally regarded as organs of touch. They are attached to the head, in front of the eyes, and are always present, and always two in number. They exhibit a vast variety of forms, some of which are figured in the following cut. I. make much use of their

antennæ to investigate surrounding objects by contact, though, if this is their sole use, it is not very easy to assign any probable reason for some of their forms; or there is indeed much plausibility in the conjectures which assign to them a part in the exercise of the senses of hearing and smell, as these senses and taste are evidently possessed by I., or at least by many I., in great perfection; but in many cases their particular seat and organs are not ascertained. The sense of smell appears to be of great importance to I. in guiding them to their food. The sexes are distinct in all I., and very remarkable differences are often exhibited by the males and females of the same species, in size, color, and the form and structure of parts that have no immediate connection with the reproductive system. What are called *neuters* in some tribes are imperfectly developed females. The connection of the sexes takes place only once in the lives of I., and a remark-




Section of the Eye of a Cockchafer (highly magnified):

A, section: *a*, optic ganglion, into which the optic nerve swells; *b*, nerves arising from its surface, and proceeding to the general retina; *c*, general retina; *d*, layer of pigment, in front of the general retina; *e*, optic nerves of the individual eyes which form the compound eye. B. a group of these, much magnified: *f*, bulb of optic nerve; *g*, layer of pigment; *h*, vitreous humor; *i*, cornea.

able provision is made in the female for the consequent fertilization of eggs, that in some, as bees, continue for a long time afterward to be successively developed.

Insects are generally oviparous; a few are ovoviviparous. The *Aphides* afford an instance of *parthenogenesis* and what has been called the Alternation of Generations: see GENERATIONS, ALTERNATION OF. The greater number of I. take no care of their eggs after depositing them and many themselves pass out of existence before the eggs are hatched; the chief part of the lives of I., being generally spent in their immature states, and their brief existence in a perfect state serving mainly for the propagation of their species. Thus many insect tribes disappear entirely on the approach of winter, their eggs awaiting the warmth of spring or summer to be hatched. The case is very different, however, with bees, ants earwigs, and some others, which carefully tend and rear their

young.—The number of eggs laid by I. is very various, but often very great. The flea, indeed, lays only about 12 and many dipterous and coleopterous insects about 50: but the silkworm produces 500 to 2,000; a single queen bee is supposed to lay 40,000 or 50,000 in a season; and the female termite or white ant, laying about 60 eggs in a minute, and for a period of considerable though unknown duration, exceeds as to the number of her eggs any other known animal.

The eggs of I. are generally white, yellow, or green; they are of very various shapes—round, cylindrical, conical, lenticular, etc.; they are sometimes smooth, sometimes beautifully sculptured.

The stage of development at which I. come forth from the egg is very different in different groups: in some, they appear as footless worms; in others, they have rudimen-

Various Forms of Antennæ.
(Copied from Roget's *Animal Physiology*.)

tary feet, still with very little power of locomotion; in others, besides little claws representing the six feet of the perfect insect, there are on the abdominal segments of the worm-like body fleshy tubercles serving as feet; in others still, the legs are well developed, and the insect, on issuing from the egg, differs little from the perfect insect, except, in the lack of wings; while, finally, in a comparatively small number (lice, etc.), there is no obvious difference except in size. Similar differences of the degree of development appear in the mouth, eyes, and other organs. Hence the subsequent changes by which the mature state is reached are very different in degree; and I. being primarily divided into those which undergo and those which do not undergo metamorphosis, some of the former are commonly spoken of as undergoing *complete*, and others *incomplete* metamorphosis. In the

first state of insect life, the insect is called a *Larva* (q.v.). Grubs, caterpillars, and maggots are the larvæ of different orders of insects. From this state it passes into that of a *Pupa* (q.v.), or nymph—a *chrysalis* or *aurelia* is the *pupa* of a lepidopterous insect—and finally it becomes an *imago*, or perfect insect.

The metamorphoses or transformations of I. have always been regarded with great admiration. A worm, inhabiting a muddy pool, becomes a winged creature that sports in the air. A crawling caterpillar, that ravenously devours some kind of herbage with its horny jaws, eating vastly more in proportion to its size than an ox, is converted into a splendid butterfly, flitting from flower to flower, and feeding only on nectareous juices. The intermediate or pupa state only adds to the wonder. The caterpillar, after several *moultings*, or changes of skin, and when it has attained its utmost size, ceases from eating, perhaps fixes itself under a leaf, becomes incased in a horny covering, as in a second egg, and from this it finally breaks forth a moth or a butterfly. Many larvæ, also, when about to change into the pupa state, spin cocoons (q.v.), in which they envelop themselves, by means of *spinnerets* on the under lip, through which a viscid secretion passes in fine threads which harden into silk. But while the pupæ of many I. are motionless, or nearly so, and eat no food whatever, the pupæ of other I., e.g., dragon-flies, are active and voracious. The intermediate or pupa state often differs little from the larva state, except in the possession of wings, or from the perfect state, except in the wings being merely rudimentary and still unfit for flight.

An opinion formerly prevailed, that the successive envelopes of the larva all were contained from the beginning within the first, within them the covering of the pupa, and within it the perfect insect. This extraordinary fancy has given place to the belief, established on sufficient observation, that the envelopes which the growing larva successively casts off, are merely a hard, thick, extravascular and unextensile epidermis; that the jaws, claws, etc., of the larva, with which it parts when it becomes a pupa, in the case of I. undergoing comp ete metamorphosis, are connected with the epidermis; and that the covering of the pupa is a new secretion. Discoveries, however, do not render less but only more marvellous, the changes which take place. Of these, some of the most important are in the organs of the mouth, the digestive organs and the nervous system.

It is not certain that any insect has a voice or cry, though the origin of the sounds produced by some of them, as the plaintive, squeaking note of the death's-head moth, is not known. The sounds of which we do know the origin are not produced by the mouth or throat: see GRASSHOPPER, DEATH-WATCH, CICADA.—The *humming* or *buzzing* of of I. during flight has been commonly ascribed to the extremely rapid vibrations of their wings. Burmeister, however, supposes it to be produced by vibratory

laminæ in the respiratory spiracles of the thorax, acted upon by the forcible emission of air during the violent muscular action necessary for flight.

Insects all are animals of small size, and many are minute. The largest species are tropical, and I. of all sizes abound in warm far more than in cold climates. The I. of the polar regions are comparatively few, and are seen only during summer; those of them whose whole existence is not comprised within a single year spending the winter. as very many I. of temperate climates also do, in a state of torpidity. All I. are very fond of heat, and many which do not become completely torpid in cold weather, become partially so. It is only in warm weather that I. display their greatest activity. As to their geographical distribution, I. are found in all countries, to the utmost alpine and polar limits of vegetable life. Many kinds are peculiar to particular climates and countries. The I. of the Malayan Archipelago and of Australia, like their other natural productions, are generally very different from those of other parts of the world. The I. of elevated mountainous regions within the tropics generally resemble those of the temperate and frigid zones, but are seldom the same. The multitude of species of I. is very great. The species of coleopterous I. alone, or beetles, are more numerous than all those of vertebrated animals together.

A few I. are important for their usefulness to man, and a greater number for the injuries which they inflict. Of the former, bees and silkworms deserve to be first named; and after them the cochineal insect and cantharides or blistering-flies. There are a few others to which we are indebted for substances useful in medicine and the arts, as kermes, lac, galls, etc. Of the injuries inflicted by I., the most serious are those caused by the destruction of herbage and crops, as by the ravages of locusts, of some kinds of caterpillars, and of numerous tribes of coleopterous and dipterous insects. See CORN-FLY: TURNIP-FLY: ETC.

The primary division of I. into those which do not and those which do undergo metamorphosis (*Ametabola* and *Metabola* of Leach), has been already noticed. The principal orders now recognized are Thysanura, Orthoptera, Odonata, Ephemerida, Plicoptera, Isoptera, Mallophaga, Corrodentia, Thysanoptera, Hemiptera, Mecoptera, Trichoptera, Lepidoptera, Coleoptera, Diptera and Hymenoptera.

*Fossil Insects.*—Several causes conspire to make the remains of I. in the stratified rocks comparatively rare, such as their possession of the power of flight, their soft and speedily decomposing bodies, and the extent to which they are preyed upon by other animals. That they were abundant during some periods is, however, evident. In the Lower Lias, several bands of limestone occur, which, from the abundance of insect remains contained in them, have been called 'insect limestone.' They are crowded with the wing-cases of several genera of coleoptera, and I.,

almost entire, are frequently found. The strongly nerved wings of some Neuroptera are beautifully perfect. In the Eocene strata, at Auvergne, a considerable thickness of limestone is formed entirely of the indusia or cases of the aquatic larva of a neuropterous insect. Amber from Tertiary strata often abounds in I., captured and inclosed while this petrified gum was in its primitive fluid condition, and now made permanent in the transparent stone, with every minute detail of structure beautifully preserved. The oldest strata in which insect remains have been observed belong to the Devonian, or, possibly Carboniferous period. The remains consist of fragments of Neuroptera, Orthoptera, and Coleoptera. The Lower Lias I. belong to various orders; they are generally of small size, indicating a temperate climate. In the Upper Lias, they are frequent; a few specimens have been found in the Oolite proper; and in the Wealden, both land and water forms occur. None have been noticed as yet in the deep sea rocks of the Cretaceous period, but in the newer Tertiary strata they are common, especially in the amber from the lignite beds of Germany, and in the cavern deposits. It is worthy of remark that no new forms have been observed; all are either referred to living genera, or placed in new yet nearly allied genera.

Injurious Insects.—*The Buffalo Carpet Beetle.*—An insect brought to this country from Europe about 1876. It is about $\frac{1}{4}$ in. long, black with white spots, and along the middle of the back is a red stripe. The eggs hatch in a short time after deposit; and the larvæ, which feed upon carpets, clothing, etc., go through various changes. When mature they enter cracks of the floor or walls, change to pupæ, and appear in the beetle form in cool weather. Remedies: Steam, formed by covering the infested material with wet cloths, thick enough to prevent burning, and passing hot flatirons over them. The use of rugs or taking up and beating carpets; afterward spraying them, and all cracks in or near the floor, with benzine. This substance must not be used near a flame.

*The Cucumber Flea Beetle.*—A dark-colored insect about $\frac{1}{16}$ in. long, that attacks cucumber and similar plants in the early stages of their growth and feeds upon the upper surface of the leaves. Remedies: Tobacco dust, fine bone dust, or gypsum scented with kerosene oil (1 gill of oil to 2 pecks of gypsum) sprinkled upon and around the plants and repeated every few days.

*The Striped Cucumber Beetle.*—A small yellow beetle, with black stripes along its back. It appears early in spring, often suddenly and in large numbers, and proves very destructive to cucumber, squash, melon, and similar plants, of which it eats the leaves and stems. Remedies are the same as for the cucumber flea beetle.

*The Flat-headed Apple-tree Borer.*—The larvæ of this insect feed upon the sap wood, and sometimes girdle the tree beneath the bark. As they grow they work further into the wood, but return to the surface when they reach

their full size; and, after changing to the beetle form, emerge through holes which they cut in the bark. The insect lives but 1 year. It attacks not only the apple but the peach and various forest trees. Remedy: Cutting out the borers or crushing them with a wire thrust into the cavities they have formed. This should be attended to early each autumn. Scraping off the rough bark and thoroughly washing the trunks and larger branches of the trees with a mixture made of 1 qt. soft soap (or 1 lb. hard soap), 2 gals. boiling water, and 1 pt. carbolic acid, tends to prevent attacks by this insect. The wash should be applied late in May and repeated twice at intervals of three weeks.

*The Peach-tree Borer.*—This is the chief insect enemy of the peach. Eggs are laid, from June to Oct., on the bark of the tree near the ground. The larvæ feed upon the sap wood. Their presence is indicated by gummy exudations. Remedy: Cutting through the diseased bark clearing burrow and crushing the larva with a probe, or destroy it by turning hot water into its channels. Trees should be examined each spring and fall, removing the earth from the trunks to find any that may be working under ground. Covering the trunks, 2 in. below and 8 in. above the ground, with paper or cloth is a preventive.

*The Round-headed Apple-tree Borer.*—After feeding for some time on the sap wood, this insect works further into the tree, sometimes going nearly through. It lives for 3 years. Its presence may be known by the appearance of its castings, which resemble sawdust, or by a discoloration of the bark under which it is at work. Remedial and preventive measures are the same as for the flat-headed apple-tree borer.

*The Squash Vine Borer.*—The larvæ feed upon the interior substance of the roots and stems of cucurbitaceous plants. Remedies and preventives: Planting summer squashes very early, to invite attack, and later in the season planting for the main crop between the rows of early ones. Catching and destroying the moths which may be found on the plants at night. Burning the vines as soon as the crop is harvested. Causing the growing vines to root at some distance from the hill by covering the fourth or fifth joint with earth.

*The Bed Bug.*—This is one of the worst pests of the housekeeper. Eggs are laid in the joints and cracks of walls, bedsteads, and other furniture. The insects multiply rapidly and have remarkable vitality. Remedies: Spraying, thoroughly, all infested places with benzine, repeating, if necessary, at intervals of a few days. Kerosene has been successfully used, and fresh pyrethrum powder often proves efficient.

*The Harlequin Cabbage Bug.*—This insect has spread from Texas over the southern states. It not only feeds upon the cabbage but also upon mustard, turnip, and allied plants. Remedies: Hand picking (throwing the insects into a pan of water upon which a little kerosene

has been poured), and afterward killing them with hot water, pyrethrum, kerosene emulsion; or sowing wild mustard with the crops, and when the bugs attack the plants spraying them with pure kerosene. The destruction of leaves upon which eggs have been laid, and the burning of rubbish in which the insects would seek refuge, are useful preventive measures.

*The Rose Bug*, known also as the rose chafer, and rose beetle, is widely distributed and is destructive to the rose, to the blossoms and leaves of the grape, cherry, apple, and plum, and to grass and other plants. The beetles appear suddenly in large numbers, remaining about 5 weeks, and as suddenly disappear. Remedies; Hand picking in the morning when the beetles are torpid. Spraying the buds with Bordeaux mixture and arsenites. Choice plants can be protected by covering with netting.

*The Squash Bug.*—A flattened insect, about ½ in. long, of a rusty black color and a very offensive odor. It is destructive to squash plants. Remedies: Hand picking early in the morning when the bugs are sluggish, spraying with kerosene emulsion, or dusting the plants with gypsum, bone meal, or finely powdered tobacco. Destroying the eggs, which are laid on the under surface of the leaves of the squash plant, is the best preventive.

*The Tent Caterpillar.*—This insect receives its name from the peculiar silken net which it forms for a home. It lives upon the leaves of various trees, and often does great damage to apple orchards. It feeds twice each day and at regular hours. Remedies: Cutting off and burning the twigs upon which nests have been formed, or burning the nests with torches. (This should be done early in the morning when the caterpillars are in the nests.) Spraying with Paris green. Removing and burning twigs upon which eggs have been laid is the best preventive.

*The Plum Curculio.*—This insect attacks many other fruits but is especially destructive to the plum. The adult feeds upon the leaves till the fruit has commenced to grow, when it attacks the plums. The female cuts crescent shaped places through the skin, in which she deposits eggs. The larvæ feed upon the fruit, working toward the stone. By the time they are fully grown, if not before, the fruit falls from the tree. Remedies: Jarring the tree every morning while the fruit is exposed to injury; catching the beetles upon a sheet as they fall, and afterward destroying them. Spraying with Bordeaux mixture and arsenites as the blossoms are about to open, after they have fallen, 10 days later, and 15 days after the third application.

*The Horn Fly.*—This insect derives its name from a peculiar habit of gathering in large clusters upon the horns of the animals which it attacks. It sucks the blood of its victims and injects a poison which causes severe pain and inflammation. Remedies: Finely powdered tobacco dusted upon the animals. Spraying every 4 days, the bodies of the cattle with fish oil, to which a little carbolic

acid has been added. This mixture can be applied with a whisk broom or a sponge.

*The White Grub.*—This is one of the most destructive of the numerous grubs which feed upon cultivated crops. In the beetle form this insect (known as the May Bug, June Bug, and Dor Bug) feeds voraciously, at night, upon the leaves of various trees. The grubs eat the roots of nearly all cultivated plants. They reach their full growth in the fall of the third year and emerge as perfect insects. Remedies: Spraying with Paris green or London purple to destroy the beetles. Fall plowing and brief rotation of crops to destroy the grubs.

*The San José Scale.*—An insect brought to California, about 1870, on some trees imported from Chili, but its native habitat is now thought to be northern China. It infests nearly all kinds of deciduous trees, attacking all parts of the tree and fruit, and is probably the most dangerous insect with which orchardists have to contend. It is common on the Pacific coast, and is found at various points in the East and South. Remedies: Lime—sulphur—salt wash, made by boiling 5 lbs. of unslaked lime and 5 lbs. of sulphur in 8½ gals. of water until it becomes a dark brown liquid—about one hour. Five pounds of lime, with sufficient water to slake it, and 4 lbs. of salt, are mixed and added to the boiled liquid, with sufficient water to make 15 gallons. See also *Lime and Sulphur Wash* under INSECTICIDES. Used when the lice are young, repeated applications of kerosene emulsion have often proved efficient. All prunings from infested trees should be burned, and no wild or neglected fruit-trees should be allowed near an orchard. Before being set out, all trees from infested nurseries unless bearing certificate of inspection and fumigation should be subjected for an hour to the action of hydrocyanic acid gas.

*The Onion Maggot.*—This is one of the worst insect enemies of the onion grower. Eggs are laid on the lower leaves or the bulb of the small onion. The larvæ feed upon the bulbs. There are several broods each year. Remedy: Spraying with carbolic acid emulsion. Preventives: Keeping hens with their broods of chickens in the fields to catch the parent flies. Growing onions on land that did not produce this crop the preceding year.

*The Clover-seed Midge.*—The larvæ eat the blossoms of clover, thus preventing development of seed. There are 2 or 3 broods each year. Remedy: Mowing when clover heads begin to form, thus delaying blossoming till the first brood has passed, but enabling seed to ripen before the second one appears.

*The Grain Weevil.*—This insect of which there are numerous species, attacks nearly all kinds of stored grain. The beetle lays eggs upon the outside, and the larvæ feed upon the interior of the kernels. Remedy: Bisulphide of carbon, 20 oz. to 1 ton of grain, and repeated, if necessary, in 6 weeks.

*The Boll Worm.*—This exceedingly destructive insect

is widely distributed. At the South it feeds upon cotton bolls, and at the North, where it is known as the corn worm, upon the growing kernels of Indian corn. It attacks, also, melon, tomato, and various other plants. The adult is a greenish-yellow moth with various colored markings, and a dark spot near the middle of each front wing. The larva, when fully grown, is about 1½ in. long, varies in color from pale green to dark brown, and has both light and dark lines along its sides. There are from 2 to 5 broods per year, according to latitude and the character of the season. Remedies: In small patches of corn; hand picking or dusting with pyrethrum. The presence of the larvæ will be indicated by the drying of the silk. In cotton fields; trapping the moths by lights at night. Planting corn, which the insect prefers, among the cotton, and feeding or burning the ears of corn before the larvæ have left them. Fall plowing is a preventive measure.

*The Canker Worm.*—This insect, known also as the measuring worm, often destroys the foliage of apple and other fruit-trees and of various ornamental trees. Eggs are laid, in clusters, on the branches of trees and hatch about the time the leaves appear. The caterpillars vary in color from a greenish yellow to a dark brown, feed upon the leaves for several weeks, and become about 1 inch in length. This is known as the fall canker worm. Another species, known as the spring canker worm, closely resembles it except that the moths appear in the spring instead of the fall. Remedy: Spraying with Paris green as soon as the eggs are hatched. Preventives: Placing on the trunk of the tree a band of canvas or thick paper, coated with tar or printer's ink, which must be renewed often enough to constantly present a sticky surface which the moths cannot cross in their efforts to ascend the tree. Bands of wool which are tight at the bark but loose outside. Metal collars closely fitted around the trunk.

*The Cut Worm.*—There are many species but they closely resemble each other in appearance and habits. The moths fly at night and usually deposit their eggs on trees or shrubs. The larvæ seek the ground, feed upon the roots of grass and other plants, and the next season are very destructive to many garden and field crops. They are especially injurious to crops planted on a freshly turned sod. They cut off the stems and eat the leaves of the plants. Remedies: Poisoning, by scattering through the field, before planting, bunches of clover that have been dipped in Paris green. Trapping under boards laid upon the ground. Digging out the worms where evidence of their work is seen. Preventives: Fall plowing and rotation of crops.

*The Fall Web Worm.*—This insect is found in nearly all parts of the U. S. The caterpillars, hatched from the eggs of a white moth, are yellow, hairy, with black heads, and bodies marked with black. They form webs and feed voraciously upon the leaves of trees. In cold climates there is only 1 brood, but in warm regions there are 2

each year. Remedies: Cutting off and burning infested branches as soon as the webs appear. Spraying with Paris green as soon as the larvæ commence feeding.

*The Tobacco Worm.*—This is the larva of a Sphinx moth. When fully grown it is a large, voracious, green worm about 3 in. long. It is very destructive to the tobacco plant. Remedy: Hand picking. This must be commenced as soon as the worms appear, and repeated at frequent intervals. Preventive: Destroying the moths by trapping on boards covered with molasses, in which fly poison has been mixed. Planting Jamestown weed in spots through the field, and poisoning the blossoms with a mixture of whisky, sweetened water, and fly poison. The poison should be used each evening as long as the moths are in the field.

*The Tomato Worm,* sometimes called the Potato Worm, is similar to the tobacco worm and is often confounded with it. In the North it is generally known as the tobacco worm: but the insect to which this name properly applies is found mostly at the South. Remedy: Hand picking. Preventive: Trapping the moths.

*The Wire Worm.*—This is a common name for the larva of various species of click-beetles. The worms are hard, small, and of a yellow or brown color. They often destroy corn by boring into the seed kernels soon after they are planted, and injure grass and other crops by feeding upon the roots. They are particularly destructive in moist soils. Remedy: Fall plowing. Preventives: Trapping the beetles. Rotation of crops, especially a system in which clover is employed.

For various other injurious insects see articles under their respective titles, or references in articles on crops which they infest. For preparation and use of remedies, when not fully noted in this article, see INSECTICIDES AND FUNGICIDES.

INSECURE, a. *ĭn′sĕ-kūr′* [*in*, not, and *secure*]: not safe; apprehensive of danger or loss. IN′SECURE′LY, ad. *-lĭ.* IN′SECU′RITY, n. *-kū′rĭ-tĭ*, the condition of being insecure; want of confidence in safety; danger; hazard.

INSENSATE, a. *ĭn-sĕn′sāt* [mid. L. *insensātus*, insensate: Sp. and It. *insensato*, stupid: F. *insensé*, senseless—from L. *in*, not; *sensus*, sense, reason]: stupid; destitute of sense or mental perception; wanting sensibility. INSEN′SATELY, ad. *-lĭ.*

INSENSIBLE, a. *ĭn-sĕn′sĭ-bl* [*F. insensible*—from L. *insensĭb′ĭlĭs*, that cannot be felt—from *in*, not; *sensus*, sense, reason]: that cannot be felt or perceived; incapable of feeling in mind or body; very slow or imperceptible; very gradual; not emotional; void of emotion or affection; dull; stupid. INSEN′SIBLY, ad. *-blĭ.* INSEN′SIBLENESS, n. *-bl-nĕs*, or INSEN′SIBIL′ITY, n. *-bĭl′ĭ-tĭ* [F. *insensibilité*]: loss of the power of feeling or perceiving; want of power to be readily or easily moved or affected; dulness; stupidity.—SYN. of 'insensibility'; indifference; imperceptibility; numbness:

apathy, unfeelingness; senselessness; torpor; insusceptibility; hardness; callousness.

INSENTIENT, a. *ĭn-sĕn′shĭ-ĕnt* [*in*, not, and *sentient*]: not having perception.

INSEPARABLE, a. *ĭn-sĕp′ă-ră-bl* [F. *inséparable*—from mid. L. *insepărābĭlĭs: in*, not, and Eng. *separable*]: that cannot be disjoined or parted. INSEP′ARABLY, ad. *-blĭ*. INSEP′ARABLENESS, n. *-bl-nĕs*, or INSEP′ARABIL′ITY, n. *-bĭl′ĭ-tĭ*, incapability of being separated or disjoined.

INSERT, v. *ĭn-sėrt′* [L. *insertus*, put or introduced into —from *in*, into; *serĕrĕ*, to interweave, to connect: Sp. *insertar*, to insert]: to set or place in or among; to thrust in; to introduce. INSERT′ING, imp. INSERT′ED, pp. INSERTION, n. *ĭn-sėr′shŭn* [F.—L.]: the act of placing or setting into another thing, or among other things; the thing inserted; a kind of lace or trimming.

INSESSORES, n. plu. *ĭn′sĕs-sō′rēz* [L. *insessus*, seated or perched upon—from *in*, on; *sedĕō*, I sit]: order of birds called *Passerine* (sparrow-like) *Birds* by Cuvier. IN′SESSO′RIAL, a. *-sō′rĭ-ăl*, pertaining to.—*Insessores*, in respect of the number of species, form by far the largest order the whole class of birds. Cuvier says: 'Its character seems at first sight purely negative, for it embraces all those birds which are neither swimmers, waders, climbers, rapacious, nor gallinaceous. Nevertheless, by comparing them, a very great mutual resemblance of structure becomes perceptible.' A principal characteristic is in the structure of the feet, which are particularly adapted for perching on the branches of trees, and have three toes before and one behind, the hind toe on the same level with the others. The legs are neither very long nor very strong; nor are the claws in general very long or very sharp. The wings are often long, and the power of flight considerable, but this is not always the case. The neck is not long. The bill has many varieties in length, thickness, etc., being very short and thick in some, very slender in others, but never exhibits the characteristic peculiarities of the accipitrine beak, though there is an approach to them in the shrikes, which are a connecting link between the two orders. The Insessores with short strong beaks are principally granivorous, those with slender beaks insectivorous; but very many adapt themselves indifferently to both kinds of food. Some feed on pulpy fruits; some on vegetable juices; some chiefly on carrion. The stomach is a muscular gizzard. To the order Insessores belong the singing birds, and throughout the whole order a variously complicated structure of the lower larynx prevails. The Insessores pair, but the attachment of the sexes in most of them seems to endure only for a single season. They generally build interwoven nests, and lay numerous eggs. The young are always naked and blind when born.

INSET, v. *ĭn-sĕt′* [*in*, into, and *set*]: to set in; to implant. N. in *printing*, a separate leaf set into a book by the binder.

INSHEATE, v. *ĭn-shēth′* [*in*, into, and *sheathe*]: to hide or cover, as in a sheath.

INSHORE, a. and ad. *ĭn-shōr′* [*in*, into, and *shore*]: near the shore.

INSIDE, n. *ĭn′sīd* [*in*, into, and *side*]: the inner part; the part within; the interior: ADJ. being within; included or inclosed in anything; interior; internal; AD. in the interior; within. IN′SIDES, n. plu. *-sīdz*, passengers in the interior of a vehicle; the internal parts.

INSIDIOUS, a. *ĭn-sĭd′ĭ-ŭs* [L. *insĭdĭōsŭs*, cunning, artful—from *insĭdĭæ*, troops of men who lie in ambush—from *in*, on; *sĕdĕō*, I sit: It. *insidioso:* F. *insidieux*]: deceitful; sly; treacherous; intended to ensnare or entrap. INSID′IOUSLY, ad. *-lĭ*. INSID′IOUSNESS, n. *-nĕs*, craftiness; deceit; treachery.—SYN. of 'insidious': circumventive; crafty; wily; artful; designing; deceptive; deceitful; guileful.

INSIGHT, n. *ĭn′sīt* [Ger. *einsicht;* Dut. *inzicht*, insight: *in*, into, and Eng. *sight*]: deep inspection or view; thorough knowledge or skill; introspection.

INSIGNIA, n. plu. *ĭn-sĭg′nĭ-ă* [L. *insignĭă*, signs, badges; *insignĕ*, a badge—from *in*, on; *signum*, a mark: F. *insigne*]: badges or distinguishing marks of office, honor, etc.; signs or visible impressions by which a thing is known.

INSIGNIFICANT, a. *ĭn′sĭg-nĭf′ĭ-kănt* [*in*, not, and *significant:* It. *insignificante;* F. *insignifiant*]: without weight or effect; unimportant; contemptible; trivial. IN′SIGNIF′ICANTLY, ad. *-lĭ*. IN′SIGNIF′ICANCE, n. *-kăns*, or IN′SIGNIF′ICANCY, n. *-kăn-sĭ*, unimportance; want of meaning; triviality. IN′SIGNIF′ICATIVE, a. *-kă-tĭv*, not expressing by external signs.—SYN. of 'insignificant': immaterial; meaningless; ineffectual; inconsiderable; trifling; mean.

INSINCERE, a. *ĭn′sĭn-sēr′* [L. *insincērŭs*, not genuine, unfair, from *in*, not; *sincērus*, pure, real: *in*, not, and Eng. *sincere*]: false; deceitful; hypocritical. IN′SINCERE′LY, ad. *-lĭ*. IN′SINCER′ITY, n. *-sĕr′ĭ-tĭ*, deceitfulness; want of truth or fidelity.—SYN. of 'insincere': dissembling; unfaithful; hollow; disingenuous; deceptive; unreliable; imperfect; unsound.

INSINUATE, v. *ĭn-sĭn′ū-āt* [L. *insĭnŭātus*, put or thrust into the bosom—from *in*, into; *sĭnŭs*, a bend, the bosom, an inlet: F. *insinuer:* It. *insinuare*]: to push or work one's self into favor by gentle means; to wind in; to ingratiate, as into the affections or one's confidence; to hint, usually in a bad sense; to gain on by gentle or artful means. INSIN′UATING, imp.: ADJ. insensibly gaining favor and confidence; having the power of pleasing. INSIN′UATED, pp. INSIN′UATOR, n. one who. INSIN′UA′TION, n. *-ū ā′shŭn* [F.—L.]: the act of insinuating; the art or power of pleasing or gaining on the affections;

a hint or distant allusion. INSIN'UA'TINGLY, ad. *-lĭ.* INSIN'UATIVE, a. *-tĭv,* having a tendency to insinuate; stealing on the affections.

INSIPID, a. *ĭn-sĭp'ĭd* [F. *insipide*—from L. *insĭpĭdus* unsavory—from *in,* not; *săpĭō,* I taste: It. *insipido*]: without taste; unable to gratify desire or satisfy the mind. dull; lifeless; flat. INSIP'IDLY, ad. *-lĭ.* INSIP'IDNESS, n., or IN'SIPID'ITY, n. *-pĭd'ĭ-tĭ,* want of taste: want of life or spirit.—SYN. of 'insipid': tasteless; heavy; spiritless; vapid; unanimated.

INSIST, v. *ĭn-sĭst'* [F. *insister*—from L. *insis'tĕrĕ,* to stand upon—from *in,* on; *sisto,* I stand: It. *insistere*]: to dwell on and press, as a point or argument; to press or urge with earnestness, or by way of a command; to stand upon, as an angle on the arc of a circle. INSIST'ING, imp. INSIST'ED, pp. INSISTENCE, n. *ĭn-sĭst'ĕns* [F. *insistance*]: the quality of being urgent. INSISTENT, a. *ĭn-sĭst'ĕnt,* standing or resting on, as an insistent wall. INSISTURE, a. *ĭn-sĭst'ūr,* in *OE.,* standing or dwelling on; regularity.

INSISTENT IDEA. See FIXED IDEA.

IN SITU, *ĭn sī'tū* [L. *in,* in; *sĭtŭs,* situation, local position]: in its natural position or place—said of a rock or fossil when it is found in the situation or place in which it was originally formed or deposited.

INSOLATE, v. *ĭn'sō-lāt* [L. *insōlātŭs,* dried in the sun—from *in,* into; *sol,* the sun]: to dry in or expose to the rays of the sun. IN'SOLATING, imp. IN'SOLATED, pp. IN'SOLA'TION, n. *-lā'shŭn* [F.—L.]: exposure to the sun's rays for drying or maturing, as fruits or drugs; a stroke of the sun.

INSOLENT, a. *ĭn'sō-lĕnt* [F. *insolent*—from L. *insŏlens,* or *insŏlen'tem,* unaccustomed, insolent—from *in,* not; *sŏlĕrĕ,* to be accustomed—*lit.,* that is unusual or unaccustomed]: haughty and contemptuous either in language or behavior; insulting; overbearing; very rude. IN'SOLENTLY, ad. *-lĭ.* IN'SOLENCE, n. *-lĕns* [F.—L.]: impudence; proud or overbearing treatment of others.—SYN. of 'insolent': impertinent; impudent; haughty; abusive; offensive; saucy; pert; audacious; rude; opprobrious; reproachful.

IN SOLIDUM IN SOLIDO, in Law: a term used in the making of a contract, and meaning, 'For a whole as a whole.'

INSOLUBLE, a. *ĭn-sŏl'ū-bl* [F. insoluble—from L. *insŏlūbĭlĭs,* that cannot be loosed—from *in,* not; *solvo,* I loose: *in,* not, and Eng. *soluble*]: that cannot be dissolved by a liquid. INSOL'UBIL'ITY, n. *-bĭl'ĭ-tĭ* [F. *insolubilité*]: quality of not being soluble. INSOL'VABLE, a. *-vă-bl,* that cannot be solved or explained.

INSOLVENCY. In a popular sense the word insolvency applies only to persons without property or means

sufficient to satisfy their creditors. The legal definition embraces all who are unable to pay their debts at maturity in the ordinary course of business, even though they may possess assets exceeding their liabilities. A failure to meet overdue obligations renders a person liable to proceedings against him in a court of insolvency, in which his assets may be taken into the possession of the officers, marshaled, and distributed to his creditors. Should there be an amount in excess of what is required to pay the creditors and the expenses of administration, the balance so remaining is the property of the debtor. From a very early period in the history of civil government, laws have existed providing for proceedings by creditors against insolvent debtors, by which the debtor's property could be taken from his possession, to be held by another as a trust fund to be applied to the payment of his just debts. In case of an insufficient amount to pay all debts in full, provisions are usually made for a *pro rata* distribution. These laws have generally provided for classes of preferred debts, payments of which were to be made in full, even though such payments exhausted the entire assets. Preferred claims commonly included all claims of the government or state, and often claims for labor to a limited amount, and claims for the necessaries of life. Provisions are usually made for the exemption of certain articles to the use of the debtor, not to be included in the assets. The Constitution of the United States provides that Congress may establish uniform laws on the subject of bankruptcy throughout all the States, and the first act upon that subject was passed in 1800, since which time there has been some Federal bankruptcy law, with brief interregnums. A uniform national law upon the subject uow exists. The first act of Congress upon this subject provided for proceedings by the creditors only, but in 1841 an amendment provided for voluntary proceedings by the debtor, by which he could surrender his property and obtain a discharge from all of his debts, provided he had been guilty of no fraud. In the absence of a national law on the subject of insolvency, the States all have authority to enact and enforce laws upon that subject. The Federal act now provides for voluntary proceedings by the debtor, as well as proceedings against him by the creditors, with provisions for his discharge. The various State acts have usually contained such provisions. The Federal act suspends all State insolvency laws during its continuance. See BANKRUPTCY.

INSOLVENT, adj. *ĭn-sŏl'vĕnt* [L. *in*, not; *solvens*, or *solven'tem*, loosening or setting at liberty, paying: Sp. *insolvente*, insolvent]: unable to pay debts; in pecuniary difficulties: N. a debtor unable to pay his debts. INSOL'VENCY, n. *-vĕn-sĭ*, inability to pay one's debts.

INSOMNIA, n. *ĭn-sŏm'nĭ-ă* [L. *in*, not; *somnus*, sleep]:

want of sleep; a disordered condition of the body characterized by sleeplessness. See SLEEP.

INSOMUCH, conj. *ĭn-sō-mŭch'* [*in*, *so*, and *much*]: so that; to such a degree that—followed by *that* or *so*.

INSOUCIANCE, n. *ĕng-sûs'ē-ângs* [F.]: carelessness; thoughtlessness. INSOUCIANT, a. *ĕng-sûs'ē-âng*, careless, thoughtless.

INSPAN, v. *ĭn-spăn'* [Dut. *inspannen*, to put to, as horses to a carriage]: to yoke draught-oxen; to yoke horses to a vehicle. INSPAN'NING, imp.: N. the act of yoking horses or draught-oxen. INSPANNED', pp. *-spănd'*, yoked up.

INSPECT, v. *ĭn-spĕkt'* [F. *inspecter*, to examine—from L. *inspectārĕ*, to look into—from *in*, into; *spĕcĭō*, I look or view]: to view or oversee for the purpose of examination or correction of errors; to look into and examine; to superintend. INSPECT'ING, imp. INSPECT'ED, pp. INSPEC'TOR, n. *-tĕr* [F. *inspecteur*]: one who looks into or oversees; a superintendent. INSPECTION, n. *ĭn-spĕk'shŭn* [F.—L.] careful examination; an official survey. INSPEC'TIVE, a. *-tĭv*, tending to inspect; inspecting. INSPEC'TORSHIP, n. the office of an inspector. INSPECTORSHIP DEED, deed executed between an insolvent person and his creditors, whereby they accept a part payment, and allow the debtor to carry on the business under their inspection, with a view to further payments.—SYN. of 'inspection': watch; survey; examination; superintendence; insight.

INSPECTOR—INSPEC'TOR-GEN'ERAL, in Military Affairs: terms of somewhat vague signification. There are inspectors-general of cavalry, infantry, artillery, engineers, militia and volunteers, whose duties are really those which their names infer—viz., the periodical inspection of the several corps of their respective arms, and the pointing out of deficiences, the corps being under command, however, of its own officers, and not of the inspector-general. The inspector-general of musketry and gunnery instruction are charged with the direct superintendence and ordering of such instruction throughout the army. In the medical department the inspectors-general of hospitals constitute the highest grade of surgeons.

INSPEXIMUS, n. *ĭn-spĕks'ĭ-mŭs* [L. we have inspected]: the first word of ancient charters confirming a former royal grant or charter.

INSPHERE, v. *ĭn-sfēr'* [*in*, into, and *sphere*]: to place within an orb or sphere. INSPHER'ING, imp. INSPHERED', pp. *-sfērd'*.

INSPIRATION, OF THE BIBLE: term denoting the action of the divine mind on the human mind, whereby the latter is both supernaturally informed or quickened and qualified to communicate the information or the influence received. The term *revelation* is used distinctive-

ly to express the supernatural *informing*, and *inspiration* to express the remainder; but, in truth, all inspiration, as the word itself bears, implies somewhat of revelation. There is a necessity for supernatural qualification in the reception of truth, only where the truth is such as cannot be or surely will not be reached by the ordinary exercise of the human faculties, but must be in some degree at least supernaturally communicated. There is however a work of inspiration beyond that of revelation, in the awakening of spiritual faculties and the heightening of emotions to such a degree that a truth vaguely known or sluggishly apprehended shall glow in the soul and issue with flaming power of utterance. Such was the inspiration which, added to the mere revelation of knowledge, gave to the prophets of old their tongues of living fire.

The *inspiration of the Scriptures* signifies a supernatural qualification or special divine authority in the books of Scripture as depositaries of truth. When the theologian asserts any book of the Bible to be inspired, he means that it possesses an authority different from any other book, that it contains truth not merely as any ordinary book may do, but by a special divine impress. It is different from ordinary books, as conveying under a more immediate and direct divine activity, and therefore in a more authoritative manner, divine truth. All orthodox theologians agree in ascribing this special divine character to Holy Scripture; but further there is no agreement. The mode of inspiration, the degree and extent of it, all are subjects of debate. On one side, are the advocates of what has been often called *plenary* inspiration, but is properly called *verbal* inspiration, and has by some of its opponents been called *mechanical* inspiration, on the other side are those who advocate various subordinate or partial degrees of inspiration. The advocates of verbal inspiration contend that the whole letter of Scripture is inspired, that its very words were immediately dictated by the Holy Spirit, so that they are literally the words of God, and not of man. The several writers of Scripture were nothing more than the penmen of the Divine Spirit, under whose control they vibrated as the strings of a harp to the fingers of the harpist. They were as a piece of mechanism touched by God himself. Those who maintain this theory, speak, indeed, of the individuality and diverse characteristics of the writers of the Scriptures, but only as one would speak of the different tones which the same artist would produce from the same musical instrument. The differences are not so much in the moral or intellectual individuality of the writers themselves, as in the diverse aims and uses with which the Holy Spirit employs them; for, according to this theory, the Divine is *all* the substance that there is in Scripture, and the human intelligence is its mere vehicle or passive

instrument. The words of Scripture are no less the words of God than if He were heard to utter them from heaven. It follows from this theory, that inspiration is essentially intermitting: it is not a higher quality of any soul, but a divine afflatus, seizing the soul at certain moments, and abandoning it at others. While the canonical epistles of the apostles Paul and Peter are to be held divinely inspired, the words of these apostles at other times may not have possessed any such authority. The authority of the *Scripture* which these apostles have delivered, however, is absolute. The inspired or theopneustic document is throughout faultless, as the sole work of the Divine Spirit—faultless equally in its form and its essence, in its spirit and in its letter. It admits of no gradation; all is equally divine, and therefore equally accurate, whether it relate to some ordinary fact, or to some great truth of the supernatural life, whether it treat of a dogma or of the details of a narrative. An argument advanced for this theory is, that inasmuch as the Bible conveys all its Divine instruction in *words*, any inspiration which is to have practical value for man must attach to the words: 'plenary' inspiration must be 'verbal.' As one of its recent supporters writes: 'Every verse of the Bible, every word of it, every syllable of it, every letter of it, is the direct utterance of the Most High.' On this theory, it follows that what God has thus miraculously written, He must have as miraculously preserved. He must also as miraculously have revealed by inspiration what books were to have place in the canon of the Scriptures, to those who in after ages compiled and decided that canon, inasmuch as the Bible itself gives nowhere any approach to a list of its own books.

In opposition to this theory are various others, all of which set certain limits to the perfection of Scripture, or in other words recognize in the Bible a human element as well as the divine inspiration of the human. Some confine inspiration to all that is directly religious in the Bible, to all that is directly of the character of revelation, leaving out of the question all that belongs to the sphere of science or ordinary history. Others exempt the form or letter of Scripture, and attribute inspiration only to its spirit, ideas, or doctrines. Others go still further, and comprise in the fallible form the mode of argument and expository details. Each of these theories supposes inspiration to be connected primarily with the authors rather than with the books of Scripture; sometimes with the extraordinary gifts accompanying the first preachers of the Word of God, sometimes with the peculiar privileges of prophets or apostles, and sometimes with their special position as immediate witnesses of the facts of revelation and their singular religious aptitude. Whatever differences characterize the advocates of these respective views, it is plain that they all deny the absolute infallibility of the letter of Scripture.

In such a controversy it is our function merely to indicate the more important opinions, and the grounds on which they are held. Those who claim for the letter of the Bible a freedom from all error or imperfection (terming this freedom *infallibility*, which seems an inapt designation for *inerrancy*) do so on the *a priori* ground of necessity; such infallibility is held to be implied in the very idea of a revelation of the divine will; while those passages which seem inconsistent with the facts of science or of history, or with other parts of the Bible itself, admit, it is maintained, of satisfactory explanation. For many such reconciliations of apparent discrepancies, see the current Commentaries and Harmonies. Those theologians on the other side, who deny the necessity of infallibility, and hold that the inconsistencies referred to never have been and never can be satisfactorily explained away (and the number in this class of theologians has been for some time on the increase), argue in the following way: It is plain, first of all, and especially, that the question is not one to be settled according to any preconception, but according to the evidence of the Scripture itself—first in the *claims* which it makes; secondly in the *facts* which it gives us. As to its own claims, we look in vain in the Bible for any assertion of absolute or literal or verbal infallibility or inerrancy. The high claim of these writings is that they are trustworthy documents, as opposed to fables, delusions, or falsifications; that (in many parts at least, and by inference throughout) they were written by holy men under a special superintendence of the Spirit of God; and especially, that they 'are able to make men wise unto salvation through faith which is in Christ Jesus,' being 'profitable for teaching, for reproof, for correction, for instruction which is in righteousness' (II Tim. iii. 15, 16). Beyond these claims our only trustworthy idea of the inspiration of the Bible is, as one has said, 'that which we form from our knowledge of the Bible itself. It is a question to be solved not by speculating what the Bible ought to be, but by examining what it actually is.' All *a priori* arguments are evidently inapplicable and dangerous on such a subject. The partisans of verbal inspiration maintain that it is necessary to the preservation of faith, to hold that God has not only revealed the truth to man, but that He has deposited that truth in an infallible record. Not only so; but the infallibility of the canon is no less indispensable; for all would be lost if any doubt was allowed to rest upon any portion of the Word of God. But if an infallible text and an infallible canon be necessary, why not also an infallible interpretation? Without the latter, the two former may be of no use. All may be lost by a false or defective commentary of the sacred text. It is plain that the idea of verbal inspiration cannot stop short of the conclusion of an infallible interpretation;

and even such a conclusion, which upsets Protestantism, by denying the right of free inquiry, would not save it; for an infallible commentary would not necessarily insure infallible instruction—all might still be lost by the weakness, ignorance or defect of the recipient mind. No infallibility of text, of canon, or even of interpretation, could insure the infallible reception of the truth, even when thus trebly guarded. If we would not be caught, then, in this absurd chain of assumption, we must break its first link, and ask, not what the Bible must be or should be, but what it is. This view is strongly argued in a recent treatise on inspiration by M. de Pressensé one of the most distinguished of the French Prot. divines belonging to the evangelical school of theology. According to this writer, who may be taken as the representative of a large class of theological thinkers, the Bible is a mass of documents of varying age and varying authenticity; its text has undergone the usual changes attending the transmission of historical documents; it is marked by the usual inequalities and varieties of style that we find in any other collection of ancient literature; it presents in many cases peculiar difficulties, differences, and even contradictions of detail, scientific and historical errors. All who have studied the Gospels minutely, and especially the quotations in the Gospels and some of the Epistles, from the Old Testament, know that there are various slight and unimportant inaccuracies and misapplications of facts. The same microscope of criticism that reveals to us the depths of the inner meaning of the divine message in its manifold fulness, reveals to us also the imperfections, and even the contradictions, of the human messenger. The following are only a few of the instances in which such 'imperfections and contradictions' show themselves:

1. The recital of the temptation in Matthew and Luke. In the former (Matt. iv. 6–8), the vision from the pinnacle of the temple is placed first; in the latter (Luke, iv. 1–10), that from a lofty mountain takes precedence.

2. In Matt. x. 10, Jesus commands his apostles to take for their missionary journey neither 'scrip, neither two coats, neither shoes, *nor yet staves*': in Mark, vi. 8, he commands them to 'take nothing for their journey, save a staff only.'

3. In the narrative of the Passion, as in that of the Resurrection, there are numerous contradictions of detail resting on a fundamental and striking unity. According to Mark, xiv. 72, the cock is represented as crowing on each of the first and second occasions on which Peter denies his Lord. In the accounts given by the other evangelists, the cock crows only on the third denial (Matt. xxvi. 74; Luke, xxii. 60). The statement of the death of Judas differs materially in Matthew and in the Acts of the Apostles. According to Matthew, Judas casts down the pieces of silver, and departs and hangs

himself; and the chief priests *afterward* purchase with the price of his guilt the potter's field for the burial of strangers, hence called the field of blood. According to the Acts of the Apostles, i. 18, Judas himself is represented as having purchased the field 'with the reward of iniquity;' then as having in some way (not explicitly stated in the narrative) met there a bloody death, from which circumstance the field took its name. In the narratives of the Resurrection, it is well known there are numerous variations: and for examples of many errors (it may be of transcription) as to historical facts, compare Mark, ii. 26 with I Sam. xxi. 2–6; and I Cor. x. 8 with Numb. xxv. 9.

4. As to the citations of the Old Testament in the New, they are almost entirely taken from the Septuagint, and evidently in many cases quoted from memory, with little regard to their exact sense in the original. Thus, Matthew (ii. 6), in applying to the Messiah the prophecy of Micah (v. 2), says of Bethlehem precisely the reverse of the Septuagint. 'Thou art too little to be reckoned among the thousands of Juda,' he translates: 'Thou art in no wise least among the princes of Juda.' In many cases, the New Testament writers, while repeating the inaccuracies of the Septuagint translation, turn them to admirable account; especially in the Gospel of Matthew and the Epistles of Paul. Thus, Matthew (iii. 3) translates with the Septuagint, 'The voice of one crying in the wilderness;' while the Hebrew is, 'The voice of one that crieth, Prepare ye in the wilderness the way of Jehovah' (Is. xl. 3). Compare also Matt. xii. 21 and Is. xlii. 4, also Matt. xv. 8 and Is. xxix. 13.

None of these errors, it is maintained, have any consequence so far as the substantial veracity and spiritual authority of Scripture is concerned. The very fact that a microscopic criticism can detect no more serious inconsistencies in the Scriptural writers, is rightly held to be one of the most striking testimonies that could be given to their truthfulness. Such slight inaccuracies are the mere freedoms which writers, thoroughly honest, and animated with a high interest which overlooks trifles, permit themselves. But however unimportant in themselves, they are considered by many theologians to be utterly inconsistent with a theory of verbal inspiration. However minute, they are recognized as real *discrepancies*—human imperfections in the sacred record—and as consequently proving that the mere text or letter of Scripture is not infallible, that it cannot be regarded as a 'direct utterance of the Most High.'

Inspiration, therefore, according to these theologians, does not imply the infallibility or even the literal inerrancy of the Scriptural text; it is something consistent with scientific, historical, exegetical, and even argumentative errors (witness, to quote no other example, the apostle Paul's allegorical argument about the sons of

Abraham, Gal. iv. 22, 25). But, it may be said that there is nothing valid, no divine authoritative element that can survive such deductions: if there are such errors in Scripture, why may it not all be imperfect or erroneous? The sufficient answer is, that it is not so—that, judged by the very same critical tests which detect such errors, the Bible remains an entirely *unique* book in its glow of spiritual light, and its manifestation of deep and eternal truth. Every Christian mind recognizes in it a higher divine knowledge and authority than in aught else. The divine spirit in Scripture makes itself felt, shines forth in every page of it; and this is inspiration in the highest sense, the mind of God meeting the minds of men in Scripture, enlightening, guiding, elevating, purifying them. There is nothing more in reality to be got from any theory than this. An inspired letter, or *word*, or message is nothing to any one *in itself;* the meaning is everything. We must understand the word or message. There is no degree of objective authority that can supersede this subjective process of apprehension on our part. There cannot, therefore, be immunity from error, let the symbol or the text be as perfect as possible. It is only to us what *we* see it to mean; and this meaning, in the case of Scripture, shines in all lands and through age after age with a divine power and lustre such as invest no other book. It is its own divine witness. In such an idea of inspiration, criticism finds nothing inconsistent, nothing impossible, and no higher idea can be well formed of it.

INSPIRE, v. *ĭn-spīr'* [F. *inspirer*—from L. *inspīrārĕ*, to blow or breathe into—from *in*, into; *spīrō*, I breathe: It. *inspirare*]: to breathe into; to draw into the lungs; to draw in breath—the opposite of *expire;* to communicate or instruct by divine influence; to infuse ideas. INSPI'RING, imp.: ADJ. animating; infusing spirit into. INSPIRED', pp. *-spīrd':* ADJ. influenced or directed, as by the Holy Spirit; inhaled. INSPI'RABLE, a. *-rā-bl*, that may be drawn into the lungs, as air. INSPIRATION, n. *ĭn'spĭ-rā'shŭn* [F.—L.]: act of drawing air into the lungs: infusion of ideas or knowledge into the mind by the supernatural influence of the Holy Spirit, see INSPIRATION of the Bible: the secret influence and direction of interested persons, as in the composition of a political article. INSPI'RATORY, a. *-spī'rā-tẽr-ĭ*, pertaining to inspiration or inhalation. INSPI'RER, n. *spī'rẽr*, one who. INSPIRIT, v. *ĭn-spĭr'ĭt*, to animate; to infuse new life or spirit into; to encourage; to cheer. INSPIR'ITING, imp. INSPIR'ITED, pp. PLENARY INSPIRATION, that inspiration under which the inspired person is rendered incapable of error in delivering the inspired message. VERBAL INSPIRATION, that in which the very words and forms of expression of the message are communicated.—SYN. of 'inspirit': to invigorate; exhilarate; enliven.

INSPISSATE, v. *ĭn-spĭs'sāt* [mid. L. *inspissātus*, condensed, concentrated—from L. *in*, into; *spissātus;* made thick]: to thicken, as a fluid by evaporation. INSPIS'SATING, imp. INSPIS'SATED, pp.: ADJ. thickened. IN'SPISSA'TION, n. *-sā'shŭn*, the act of making a liquid thick.

INST.: a contraction for *instant*. See under CURT.

INSTABLE, a. *ĭn-stā'bl*, for *unstable* [*in*, not, and *stable:* L. *instăbĭlĭs*, that does not stand firm]: inconstant; prone to change; not fixed. INSTA'BLENESS, n. *-bl-nĕs*, or IN'STABIL'ITY, n. *-stă-bĭl'ĭ-tĭ* [F. *instabilité*]: changeableness; fickleness; inconstancy.—SYN. of 'instability'; wavering; unstableness; unsteadiness; mutability.

INSTALL, v. *ĭn-stawl'* [F. *installer*—from mid. L. *installārĕ*, to place in a seat or office—from mid. L. *in*, into; *stallum*, a stall, a seat, (see STALL)]: to set or place in a stall or official seat, as the outward sign of possession; to invest with, as an office or dignity. INSTALL'ING, imp. INSTALLED', pp. *-stawld'*. IN'STALLA'TION, n. *-lā'shŭn* [F.—L.]: the act of giving possession of an office, rank, or order with the accustomed ceremonies; applied especially to the ministerial or pastoral office in the church. The ceremony and the name differ according to the office that is conferred, as 'enthronization' or 'consecration' for a bishop in the Church of England, 'consecration' for a bishop in the Prot. Episc. Church, 'induction' (q.v.), or 'institution' (q.v.) for a rector, 'installation' properly for a canon or prebendary. Installation is the customary term for the public establishing of a pastor in non-prelatical churches. The word is also used generally for a formal introduction to any office. INSTAL'MENT, n. *-mĕnt*, the act of giving possession to an office with the usual ceremonies; part payment, as of a sum of money.

INSTANCE, n. *ĭn'stăns* [F. *instance*—from L. *instantĭă*, a being near, urgency—from *instans*, present, urgent—from *instārĕ*, to be at hand, to urge—from *in*, upon, near; *stārĕ*, to stand]: example; a case occurring; order of occurrence, as, in the *first instance;* solicitation; importunity: V. to mention or give as an example. IN'STANCING, imp. IN'STANCED, pp. *-stănst*. IN'STANT, a. *-stănt* [F. *instant*, a moment—from L. *instans*, present]: immediate; present; without delay; urgent; current: N. a point in duration; a moment. IN'STANTLY, ad. *-lĭ*, immediately; directly; at once; without delay. IN'STANTA'NEOUS, a. *-tā'nĕ-ŭs* [It. *instantaneo;* F. *instantané*—from L. *instans*]: done in an instant; occurring or acting at once. IN'STANTA'NEOUSLY, ad. *-lĭ*. IN'STANTA'NEOUSNESS, n. INSTANTER, ad. *ĭnstăn'tĕr* [L.]: without delay; immediately. FOR INSTANCE, for example.—SYN. of 'instance n.': case; illustration; urgency; application: occurrence; occasion: instigation; motive; influence: document; act: the Syns. are generally in OE. use;—of 'instant': pressing; importunate: earnest.

INSTANTER. See under INSTANCE.

INSTATE, v. *ĭn-stāt'* [*in*, into, and *state*]: to set or place, as in a rank or condition. INSTA'TING, imp. INSTA'TED, pp.

IN STATU QUO, *ĭn stăt'ū kwō* [L. in the position in which]: an abbreviated form of IN STATU QUO ANTE—in the position in which it was; in the position that things were in before.

INSTEAD, ad. *ĭn-stĕd'* [*in*, into, and *stead:* AS. *on-stede*, in the place: Dut. *stede*, a place]: in the place or room of. INSTEAD OF, a prepositional phrase; in room of; in place of.

INSTEEP, v. *ĭn-stēp'* [*in*, into, and *steep*]: in *OE.*, to soak or steep well; to macerate; to lie under water. INSTEEP'ING, imp. INSTEEPED, pp. *ĭn-stēpt'*.

INSTEP, n. *ĭn'stĕp* [*in*, into, and *step*]: the arch or raised part of the human foot near its junction with the leg; the part of the hind leg of a horse reaching from the ham to the pastern-point. *Note.*—INSTEP is a probable corruption of Eng. *in-stoop*, that is, the inbend or arched part of the foot.

INSTERBURG, *ĭn'stĕr-bûrg:* town of Prussia, province of E. Prussia, pleasantly situated on the left bank of the Angerap, 15 m. w.n.w. of Gumbinnen. It contains a castle, and several educational institutions. Cloth-weaving, tanning, brewing, and distilling, with trade in corn and linseed, are carried on. Insterburg had its origin in a castle of the Teutonic Order of Knights, built here at an early period. At the close of the 16th c., it had attained the rank of a town, which increased considerably after the 17th c., about which time a number of Scottish families settled at Insterburg on account of its trade. Pop. 23,546.

INSTIGATE, v. *ĭn'stĭ-gāt* [L. *instīgātus*, incited, stimulated: It. *instigare:* F. *instiguer*]: to urge or incite to wrong or crime; to set on or encourage. IN'STIGATING, imp. IN'STIGATED, pp. IN'STIGATOR, n. *-tĕr*, an inciter to ill. IN'STIGA'TION, n. *-gā'shŭn* [F.—L.]: incitement to evil or wickedness; impulse to commit a crime or evil act.—SYN. of 'instigate': to urge: provoke; incite: stimulate; spur; impel; animate; tempt; goad; set on.

INSTIL, or INSTILL, v. *ĭn-stĭl'* [F. *instiller*—from L. *instillārĕ*, to pour in by drops—from *in*, into: *stillo*, I drop]: to pour into by drops; to infuse by drops; to infuse slowly or by small quantities, as into the mind. INSTIL'LING, imp. INSTILLED', pp. *-stĭld'*. INSTIL'LER, n. one who. IN'STILLA'TION, n. *-lā'shŭn* [F.—L.]: the act of infusing by drops or small quantities, as of principles into the mind. INSTIL'MENT, or INSTILLMENT, n. anything instilled; that which is instilled.—SYN. of 'instil': to implant; infuse; drop into; inculcate; ingraft.

INSTINCT. n. *ĭn'stĭngkt* [F. *instinct*, instinct or in-

clination—from L. *instinctus*, suggestion, impulse]: the natural impulse or disposition by which animals are guided in performing those actions necessary for their well-being and the continuation of their species: ADJ. moved; animated. INSTINC'TIVE, a. *-stĭngk'tĭv* [F. *instinctif*]: acting without the intervention of reason or deliberation; spontaneous. INSTINC'TIVELY, ad. *-lĭ*, by instinct; by the impulse of nature alone.

INSTINCT: an inherited disposition to perform certain acts without training in them and without foresight of the ends to be achieved by them. All animals, including man, possess instincts by means of which they are enabled to adapt their conduct to their surroundings with a measure of success. In the higher animals intelligence early comes in to modify the instinctive activities, and in man, although the instincts are very numerous and powerful, they are so completely overgrown with the effects of experience and rational choice that it is often difficult to discern them. Walking and talking, for example, are certainly instinctive. Not that either one occurs without the controlling guidance of experience, but that both are blindly impulsive in their origin and that neither is undertaken until the nervous system is ripe for its expression. All the great human interests are based on instincts.

Intincts in animals are not so inflexible as they are often supposed to be. In the first place many instincts will disappear wholly if not cultivated when they are first ready for use. Thus it is said that chickens if not allowed to follow the maternal hen when they are very young, soon refuse to do so at all. Again, many instincts if they are first given expression at an unfavorable time, so that they result in pain or fright, may never again be called forth. Many instincts are highly plastic, as is illustrated by the manner in which spiders accommodate themselves in the spinning of their webs to the special conditions with which they are confronted. They have an instinct to make a web after a given pattern, but this is modified to meet the given case. It is to be said, however, that not a few of the lower animals, including certain of the insects, display the most amazing obliviousness to the outcome of their instinctive acts. For instance, not a few observations are on record of wasps preparing their nests with every care, only to seal them up empty, thus rendering their labor absolutely vain. In animals high up in the scale instincts lead to the formation of useful habits. It can hardly be supposed that after the original expression of the instinct, its subsequent expression can be absolutely blind. But in any case a certain valuable kind of habit is established and the animal is to that extent better off.

The question of the origin of instincts is one in which modern biological science has been specially interested. Three theories are in the field. The theory of 'lapsed in-

telligence' holds that instinctive acts were originally intelligent and that they became stamped in by evolution on account of their usefulness in preserving their possessors. The 'reflex theory' holds that instincts have arisen through the selection by evolution of chance variations in action which were beneficial. A third view known as 'organic selection' holds that consciousness probably operated to assist in the preservation of creatures during the period when their instinctive activities were growing up. The original presence of the *acts* may be entirely due to chance, but their survival could hardly be explained, it is held, without the interposition of conscious guidance; because until the instinct is *wholly* formed, it is useless, and this formation process in the case of complex instincts must have occupied a long time.

INSTITUTE, v. *ĭn'stĭ-tūt* [L. *institūtus*, placed, set up—from *in*, in; *stătŭō*, I cause to stand, I put: F. *instituer*, to establish]: to begin or set in operation; to found or originate; to establish; to invest with the spiritual part of a benefice: N. [F. *institut*]: established law; settled order; a literary or philosophical society; in *Scotch law of entail*, the person first mentioned or described as entitled to take the entailed estate; all after him are called substitutes. INSTITUTE, THE, in *English law* mode of citation or reference to Chief-justice Coke's great work, in four volumes, on English law. Another name for the first part of it is *Coke upon Littleton*, owing to its being a commentary by Coke upon a work of Littleton. The second book is a comment on acts of parliament, the third is a treatise on the pleas of the crown, and the fourth on the different kinds of courts. IN'STITUTES, n. plu. *-tūts*, a book of elements or principles; particularly applied to the elementary treatise on the Roman or civil law; a commentary (see LAW: LAW, ROMAN OR CIVIL). IN'STITUTING, imp. IN'STITUTED, pp. IN'STITUTOR, n. *-tėr* [F. *instituteur*]: one who founds or institutes. IN'STITU'TION, n. *-tū'shŭn* [F.—L.]: the act of establishing that which is prescribed or founded by authority; an establishment, public or social; a system or society established for promoting a particular object; the ceremony of investing a clergyman with the spiritual part of a benefice. INSTITUTIONS, n. plu. applied to the laws, customs, etc., of a country. IN'STITU'TIONAL, a. *-shŭn-ăl*, instituted by authority; elementary; also IN'STITU'TIONARY, a. *-ėr-ĭ*. IN'STITU'TIST, n. one who writes elementary rules or instruction. IN'STITU'TIVE, a. *-tĭv*, having the power to establish. INSTITUTES OF MEDICINE, the science of physiology as the basis of medicine.—SYN. of 'institute, v.': to settle; set up; erect; appoint; ordain; originate; found; begin; ground; educate; instruct; invest; fix; enact; prescribe.

IN'STITUTE OF FRANCE: French national associa-

tion for cultivation of the fine arts, literature, science, and philosophy. On the revival of letters, associations for mutual intercourse and co-operation, called Academies (q.v.), were formed in Italy and France, one of which, composed of poets of no great note, was converted by Richelieu into a national institution, under the name of *Académie Française*, and met for the first time 1637, July 19. The chief object of this institution was to render the French language pure, eloquent, and capable of treating the arts and sciences; and by the 26th article of its statutes, it pledged itself to compose a dictionary, a treatise on rhetoric, and a treatise on poetry. (The great Dictionary, much criticised then and since, was published 1694). The influence of the *Académie* on the French language and literature has naturally been in the main conservative, and directed on 'taste' rather than on originality. It boasts on its roll of members most of the eminent French writers, though it rejected La Bruyère, Boileau, and Molière (as being a player). The taste for devices, inscriptions, and medals, which prevailed in the 17th c., suggested to Louis XIV. the foundation of the *Académie des Inscriptions*, 1663, for the immediate object of examining his collection of medals and other antiquities. In 1716, its title was changed to the *Academy of Inscriptions and Belles-lettres*. The third Academy in order, the *Académie Royale des Sciences*, was founded by Colbert 1666, remodelled by Pontchartrain 1699, and reconstituted as a branch of the Institute 1816. The painter Le Brun founded 1648 an *Académie de Peinture*, for which he obtained a charter 1655; and Colbert remodelled and established it 1664, as the *Académie Royale de Peinture et Sculpture*, with which was afterward incorporated the *Académie Royale d'Architecture*, founded 1671.

All these Academies were suppressed by an edict of the Convention, 1793, Aug. 8; but 1795, Oct. 25, the Directory established a great national association, for the promotion of the arts and sciences, called the *Institut National*. It was at first divided into three classes—viz., Sciences Physiques et Mathématiques; Sciences Morales et Politiques; Sciences de Littérature et Beaux-Arts; but on the suppression of the second class by the First Consul 1803, the remaining classes were re-arranged as follows: Sciences Physiques et Mathématiques; Langue et Littérature Française; Histoire et Littérature Anciennes; Beaux-Arts; and this arrangement continued during the Empire. 1816, Mar. 21, Louis XVIII. restored the names of the old Academies to the four classes of the Institute: (1) *L'Académie Française;* (2) *L'Académie des Inscriptions et Belles-lettres;* (3) *L'Académie des Sciences;* (4) *L'Académie des Beaux-Arts*, the general title, 'Institute of France,' becoming successively modified by the epithet 'Royal,' 'Imperial,' or 'National,' in correspondence with the political changes in France. An

ordinance of 1832 re-established the old second class as a fifth Academy, *L'Académie des Sciences Morales et Politiques*, and this organization still subsists.

Each Academy has its own jurisdiction and work, an agency and secretaries; the library and the valuable collections of the Institute are common to the five; the common fund is managed by a committee of ten members (two from each Academy), under the presidency of the minister of public instruction. Members are elected by ballot, the election requiring to be confirmed by govt., and members of one Academy may be elected as members of any or all of the other four. Each member has an annual salary of 1,500 francs, and each secretary of an Academy 6,000. The members of the *Académie Française* receive a *jeton de presence*, which, if they attend all the meetings, raises their salary to 5,000 francs each, and five charged with the compilation of the Dictionary get besides 1,500 francs. Those engaged on a history of French literature get 2,400 francs each. The *Académie Française* meets one hour, the other four Academies two hours a week; each has also one public annual sitting; and Oct. 25 there is a general public meeting of the whole five. All the Academies, with the exception of the first, have a certain number of *académiciens libres*, *associés étrangers*, and *correspondants;* the 'académiciens libres' have the right only of attending the meetings of the Academy; the 'associés étrangers' are foreign members.

The *Académie Française* had for its chief object the cultivation of the French language, and was charged with the composition of a French dictionary, the merits of which have been often disputed and its plan condemned. The disposal of its vacant chairs has not always been regulated by the best taste and judgment, Descartes, Pascal, Molière, La Bruyère, J. J. Rousseau, Balzac, Dumas père, Daudet, and Zola having been rejected, while in former times many a shallow court favorite was accepted.

The *Académie des Inscriptions et Belles-Lettres* has 40 members, 10 free academicians, and 8 foreign associates. It has 40 correspondents at home and abroad, and devotes itself chiefly to subjects of a historical nature. The most distinguished scholars, both in and out of Europe, are, or have been, connected with it. Committees of this academy superintend the erection of public monuments and the preservation of those already in existence. Works brought out under its auspices are: *Histoire littéraire de France*, *Recueil des Historiens de France*, and *Corpus Inscriptionum Semiticarum*.

The *Académie des Sciences* has for its province the various branches of knowledge connected with the physical and mathematical sciences, natural history, medicine, etc., there being in all 11 sections. It has 68

members, 10 free academicians, and 100 correspondents. The number of foreign associates is limited to eight.

The *Académie des Beaux-Arts* has 40 members, 10 free academicians, 10 foreign associates, and 61 correspondents. A committee of this academy was charged with the publication of a dictionary of the fine arts.

The *Académie des Sciences Morales et Politiques* has 40 members, 10 free academicians, 6 foreign associates, and 48 correspondents.

Each year a sum is voted by the French govt. for the general fund of the Institute, and from this fund are paid the allowances of members, salaries of the secretaries and other officials, and several prizes; also experiments, printing, and other expenses.—See Potiquet's *L'Institut National de France;* Bouillier's *L'Institut et les Académies de Province, Annuaire de L'Institut, Memoires de L'Institut,* etc.

INSTITU'TION, in Church law: final and authoritative appointment to a church benefice—especially a bishopric—by the person with whom such right of appointment ultimately rests. Thus, in the Rom. Cath. Church—even after the election of a bishop by the chapter, or his 'nomination' by the crown, when that right belongs to the crown—it is only the pope who confers 'institution.' In the usage of the Church of England, institution is a conveyance of the cure of souls by the bishop, who, or whose deputy, reads the words of the institution, while the clerk kneels. The institution vests the benefice in the clerk, for the purpose of spiritual duty, who thereupon becomes entitled to the profits thereof. But his title is not complete till induction (q.v.).

INSTITUTIONAL CHURCH, a non-credal organization of Christians, to supplement the regular church methods and ministrations—preaching, prayer-meetings, Sunday school, and pastoral visitations—by helpful social work in the community. The moving spirit is the same as in the Y. M. C. A., University Settlement, Salvation Army, Rescue Missions, Christian Endeavor societies, etc.; but 'with the emphasis on Church, not Institution.' The prime object is to reannex to the church the functions which other bodies have been compelled to fill by its neglect of its duty; and strengthen it by gathering potential Christian elements which under the old system do not come to it, as well as by combining in itself all the claims to public gratitude and interest now shared between the purely ecclesiastical and the purely social institutions, or the half-way houses like the Y. M. C. A. It differs from the latter in not merely furnishing a religious atmosphere which may lead to church membership, but enrolling members at once in a real church of Christian work by absorbing the secular features of the other; in a word, to do,

without vows or uniforms, what the Catholic Church has always done with its charitable functions—make them an integral portion of the church organization. Hence, it is not by itself a church in the sense of the Roman Catholic or the Methodist Church, but in a broad sense a description of any church which adds educational or social work; in general use, a title of any which throws into this work its predominant vitality. Free pews are an essential accompaniment, as the social aristocracy fostered by rented pews contradicts the basal democratic principle of institutional work; hence it is sometimes called Free Church, but preferably Open Church. The present name originated with President Tucker of Dartmouth College, who applied it to Berkeley Temple, Boston.

The movement started chiefly with the High Church element in England, modeled on the Catholic idea; it flourished for two generations in that country before reaching the United States, about 1880, and it has hardly been vigorously spreading here for above 15 years. Now, however, a large number of churches—Episcopal, Congregational, Baptist, Methodist, Presbyterian, Unitarian—have adopted the idea with increasing vigor, besides the work of this class always performed by the brotherhoods and sisterhoods of the Roman Catholic Church. One of the earliest of these was Plymouth Church of Indianapolis, inspired by the memory of Mr. Beecher. Notable among others are the St. Bartholomew, St. George, St. Paul, and Judson Memorial of New York, and the Tabernacle of Jersey City; Berkeley Temple, Parker Memorial, and Ruggles Street Baptist of Boston; Grace and Bethany of Philadelphia; Ninth Street of Cincinnati, Pilgrim of Cleveland; Plymouth Tabernacle of Detroit; People's of St. Paul; and the Denver Tabernacle. In 1894 the Open and Institutional Church League was organized in New York; it held several conventions in Eastern cities, and for three years published the *Open Church* as its organ, but it has practically lapsed, being merged in the *National Federation of Churches and Christian Workers.*

INSTRUCT, v. *ĭn-strŭkt'* [L. *instructus,* arranged, trained, instructed—from *in,* in; *strŭĕrĕ,* to pile up: It. and F. *instruire—lit.,* to pile up or build one thing into another]: to impart knowledge to; to teach; to give directions to; to advise or give notice to. INSTRUCT'ING, imp. INSTRUCT'ED, pp. INSTRUC'TOR, or INSTRUC'TER, n. *-tĕr* [F. *instructeur*]: one who imparts knowledge to. INSTRUC'TRESS, n. fem. *-trĕs,* a woman who imparts knowledge. INSTRUC'TIBLE, a. *-tĭ-bl,* capable of being instructed. INSTRUC'TION, n. *-shŭn* [F.—L.]: the act of teaching or informing the understanding; information; counsel; authoritative direction; order. INSTRUC'TIVE, a. *-tĭv* [F. *instructif*]: conveying knowledge; serving to inform. INSTRUC'TIVELY, ad. *-lĭ.* INSTRUC'TIVE-

NESS, n. *-nĕs.*—SYN. of 'instruct': to inform; educate; institute; direct; acquaint; apprise; advise; indoctrinate; enjoin; command; order; in *OE.*, to model; form; —of 'instruction': teaching; mandate; education; breeding; training; indoctrination; advice; command.

INSTRUMENT, n. *ĭn'strû-mĕnt* [F. *instrument*—from L. *instrumen'tum*, a tool—from *instrŭō*, I prepare, I set in order—from *in*, on; *strŭō*, I pile up, I build: It. *instrumento—lit.*, that which prepares or sets a thing in order]: a tool; a machine; a machine for the production of musical sounds (see INSTRUMENTS, MUSICAL); that by which something is prepared, produced, or done; a will or testamentary writing; writing containing the terms of a contract; an agent, often in a bad sense. IN'STRUMEN'TAL, a. *-tăl*, pertaining to an instrument; serving to promote or effect some object; not vocal, as instrumental music. IN'STRUMEN'TALIST, n. *-ĭst*, one who plays on a musical instrument. IN'STRUMEN'TALLY, ad. *-lĭ.* INSTRUMENTAL'ITY, n. *-tăl'ĭ-tĭ*, agency of anything, as means to an end. IN'STRUMENTA'TION, n. *-tā'shŭn* [F.]: the act of using an instrument; in *music*, the arrangement of a musical composition to be performed by several different instruments; a musical composition for an orchestra or band. IN'STRUMEN'TIST, n. *-tĭst*, one who.

INSTRUMENTA'TION, in Music: arranging of music for a combined number of instruments. The nature and character of the musical ideas must determine whether the instrumentation shall be simple or artistic, and perhaps complex; the latter being the case when some of the instruments take a more prominent part than others. For both purposes, a thorough knowledge of every instrument in the orchestra is absolutely necessary, as without this instrumentation becomes only a deafening mass of sounds. The stringed instruments, from their nature, in most cases, form the principal parts of a score, around which the other instruments move, without depriving them of their importance. The wind instruments represent, more or less, a subordinate chorus, which may again be divided into two kinds, viz., the wood instruments and the brass, which, with the stringed instruments, give three essentially different choral effects, that may be mixed together in endless variety. A knowledge of the art of instrumentation is acquired only by great experience; at the same time much may be learned by consulting the following works: *Die Instrumentirung für das Orchestra*, by Sundelin; the German textbooks on instrumentation by Marx and Lobe; Berlioz, *Traité d'Instrumentation;* Gassner, *Partiturkenntniss.*

IN'STRUMENTS, MUSICAL: machines for producing musical sounds. They are in three classes—stringed, wind, and percussion. Stringed instruments are of three kinds: those whose sounds are produced by fric-

tion, as the violin, viola, violoncello, etc.; by twitching with the finger or otherwise, as the harp, guitar, mandolin, etc.; by striking, as the pianoforte and dulcimer. Wind instruments are of two kinds, viz., the reed species—as the hautboy, clarionet, etc.—and the flute species, as the flute, flageolet, etc. The trumpet, horn, trombone, and all similar wind instruments, are generally classed among the reed instruments; but whether the sound is produced by the lips of the blower acting as a reed, or by the compressed stream of air, as in flute instruments, is not yet determined. Percussion instruments are those which on being struck produce only one fixed sound, as the drum, triangle, cymbals, tambourine, etc. Whatever material may be used to form a musical instrument, there are only two means of producing musical sounds, and these are by the vibrations of a fixed elastic body, such as the string of the violin or pianoforte, the reed of the hautboy, bassoon, etc.; or by the vibrations of a confined column of air put into motion by a stream of compressed air, as in the flute, flageolet, and all the ordinary flute species of organ-pipes. For a description of the various musical instruments, see their separate titles.

INSUBJECTION, n. *ĭn'sŭb-jĕk'shŭn* [*in*, not, and *subjection*]: want of subjection.

INSUBORDINATE, a. *ĭn'sŭb-ŏr'dĭ-nāt* [*in*, not, and *subordinate*]: not submitting to authority. IN'SUBOR'DINA'TION, n. *-nā'shŭn* [F.—L.]: disobedience to lawful authority; state of disorder.

INSUBSTANTIAL, a. *ĭn'sŭb-stăn'shăl* [*in*, not and *substantial*]: in *OE.*, for unsubstantial.

IN'SUCKEN MUL'TURES, in Scotch Law: see THIRLAGE.

INSUFFERABLE, a. *ĭn-sŭf'fĕr-ă-bl* [*in*, not, and *sufferable*]: that cannot be borne or endured; intolerable. INSUF'FERABLY, ad. *-lĭ*, to a degree beyond endurance.

INSUFFICIENT, a. *ĭn'sŭf-fĭsh'ĕnt* [*in*, not, and *sufficient*]: not sufficient; inadequate to any need, use, or purpose; incapable. IN'SUFFI'CIENTLY, ad. *-lĭ*. IN'SUFFI'CIENCE, n. *-ĕns*, or IN'SUFFI'CIENCY, n. *-ĕn-sĭ*, inadequacy of power or ability; incapacity; incompetency; deficiency. —SYN. of 'insufficient': inadequate; unfit; unequal; incommensurate; incompetent; incapable.

INSUFFLATION, n. *ĭn'sŭf-flā'shŭn* [L. *in*, in; *sufflātus*, blown up, puffed out]: the act of blowing gas, air or finely divided solids into a cavity of the body. IN'SUFFLATOR, n. *-tĕr*, instrument for blowing any powder into the nose, larynx or other part.

INSULAR, a. *ĭn'sū-lĕr* [F. *insulaire*—from L. *insŭlāris*, an islander—from *insŭlă*, an island]: of or pertaining to an island; surrounded by water. IN'SULARLY, ad. *-lĭ*. IN'SULAR'ITY, n. *-lăr'ĭ-tĭ*, state of being insular. IN'-

SULATE, v. *-lāt,* to place or set alone or apart; to place in a detached situation; to cover with a coating or wrapping of non-conducting material, or to interpose non-conducting material between conducting bodies. IN'SULATING, imp. IN'SULATED, pp.: ADJ. standing by itself; not connected. IN'SULATOR, n. *-tėr,* one who insulates; a non-conductor of electricity. IN'SULA'TION, n. *-shŭn,* the state of being detached from other objects; any non-conducting material used to cover a conductor or to prevent electrical contact between conductors. INSULAR-CLIMATE, in *meteor.*, such a climate as exists in an island, where the sea tempers the heat of summer and the cold of winter. It is opposed to a continental or excessive climate.

INSULT, n. *ĭn'sŭlt* [F. *insulte*—from L. *insultus,* leapt out or against—from *in,* in; *sălĭō,* I leap: It. *insulto—lit.,* the act of springing or leaping at or upon]: any abuse offered to another in words or actions; an indignity: V. *ĭn-sŭlt'* [F. *insulter*]: to treat with indignity or insolence either by words or actions. INSULT'ING, imp.: ADJ. conveying an insult. INSULT'ED, pp. INSULT'ER, n. *-ėr,* one who. INSULT'INGLY, ad. *-lĭ.* IN'SULTA'TION, n. *-tā'shŭn,* in *OE.*, abuse or injurious treatment.—SYN. of 'insult, n.': affront; outrage; contumely; abuse;—of 'insulting': abusive; insolent; contemptuous.

INSUPERABLE, a. *ĭn-sū'pėr-ă-bl* [F. *insupérable*—from L. *insŭpĕrābĭlĭs,* that cannot be passed over—from *in,* not; *super,* above or over: It. *insuperabile:* Sp. *insuperable*]: that cannot be overcome; insurmountable. INSU'PERABLY, ad. *-blĭ.* INSU'PERABLENESS, n. *-bl-nĕs,* or INSU'PERABIL'ITY, n. *-bĭl'ĭ-tĭ,* the quality of being insuperable.

INSUPPORTABLE, a. *ĭn'sŭp-pōrt'ă-bl* [*in,* not, and *supportable:* F. *insupportable*]: that cannot be borne or endured; insufferable. IN'SUPPORT'ABLY, ad. *-blĭ.* IN'SUPPORT'ABLENESS, n. *-bl-nĕs.*

INSUPPRESSIBLE, a. *ĭn'sŭp-prĕs'sĭ-bl* [*in,* not, and *suppressible*]: not to be suppressed or concealed. IN'SUPPRES'SIVE, a. *-sĭv,* not able to keep under; same as 'insuppressible.'

INSUR'ANCE: contract of indemnity, whereby one party, in consideration of a specified payment, called a 'premium,' undertakes to guarantee another against risk of loss; or contract whereby one party, in consideration of such premium, agrees to pay another a certain amount on the occurrence of a specified event. The first principles of insurance appear to have been acted on at a very early priod, since—without attaching undue importance to the opinions of writers who contend, on the authority of Livy, that those principles were known during the second Punic war, or that Emperor Claudius can be considered an insurer, because, to encourage the importation of corn, he took all risk of

loss or damage concerning it himself—there are extant rules of sundry 'guilds,' or social corporations of the Anglo-Saxons, whereby, in return for certain fixed contributions, the members guarantee each other against loss from 'fire, water, robbery, or other calamity.' It was, however, first to cover maritime casualties that insurance in its commercial aspect seems to have been undertaken. As early as 1435, the magistrates of Barcelona issued an ordinance relating to this class of business, and we find in the speech of the Lord Keeper Bacon, on opening Queen Elizabeth's first parliament, the allusion, 'doth not the wise merchant, in every adventure of danger, give part to have the rest assured?' The merit of being the first to apply mathematical calculations to the valuation of human life belongs to the famous John de Witt, pensionary counselor of Holland, whose report to the states general on the valuation of life annuities, has been lately brought to light. The first insurance company established in Britain appears to have been the 'Amicable,' 1696; not the office known by that name now, but the one known as the 'Hand-in-Hand.' Other companies were gradually started there. But for many years afterward it was prohibited on the continent of Europe as immoral. Modifications of the system, however, known as annuities and tontines had long been familiar, and the former had been employed as a basis for national loans. It was not until the 17th century that sufficiently reliable observations on human life were compiled to furnish a satisfactory foundation for the business, and that the commercial elements of society attained an importance sufficient to give it the needed support. Companies thereafter multiplied in Great Britain and the business gradually extended to the continent of Europe.

Life insurance was introduced from Great Britain to America, and the first society was organized in Philadelphia in 1759 for the relief of Presbyterian ministers and their widows and children, followed 10 years later by a similar corporation for the benefit of Episcopal clergymen and their widows. Their operations, however, were confined to the classes named. The first company to attempt a general business was the Insurance Company of North America, organized in the same city in 1796. A number of other companies gradually followed in that and other important cities during the earlier part of the 19th century. All these earlier offices, however, combined fire or marine insurance, or banking and trust business, as well as annuities with life insurance, and gradually abandoned the latter. Popular prejudice proved to be too strong, and the economic condition of the country to be too little developed to make its prosecution successful. The real beginning of modern life insurance in the United States dates from the organization of the Mutual Life Insurance Company

in New York in 1843, which was quickly followed by that of others, both there and elsewhere, some of which had already secured charters for the purpose. The business of these new companies was confined to life insurance, and their success led to the gradual multiplication of such companies until within 20 years it had attained proportions which made these corporations among the most important financial institutions of the land. The business has since continued to expand until the enormous sums now invested in life insurance in America far exceed those in any other country. Its leading institutions are unrivaled in their size elsewhere, and several are transacting business in every quarter of the globe. Omitting the gambling and other objectionable projects for which the science of insurance has been held responsible, it would exceed the limits of the present article to give any detailed account of even the more legitimate applications of it which are current at the present day; the traveller can be protected from the pecuniary loss entailed from damage by rail or flood; the gardener from the devastation of the hailstorm; the farmer from the inroads of disease among his cattle; and employer and employed alike reap the benefit of a guarantee on fidelity.

*Legislature and Government.*—While every known form of insurance is carried on in the United States, there is no general law governing the conduct of the business. Till about 1856, the various companies in each branch of the business carried on their operations according to the principles that prevailed in England, with such modifications as American business methods and interests made necessary. Massachusetts was the first state to insist upon an official supervision of all insurance business transacted within its limits by companies chartered there or elsewhere, and much of that state's most beneficent legislation has been in the interest of improved, accurate, and equitable methods of conducting the business and for the complete protection of policy-holders. The establishment of a state insurance department there, in which was vested the entire control of all insurance business in the state, and the enactment of special laws for the management of the companies, placed the business on a firmer footing than it previously had, and gave to the public an adequate guarantee of fairness and responsibility. In 1859 New York followed the example of Massachusetts, and since then nearly every other state has created an insurance department. The absence of a general system enforced by every state, and the radical differences on identical subjects in the statutes of the several states, naturally led to confusion in practice and to litigation in settlements. In Massachusetts it was insisted that all foreign companies (those chartered elsewhere) carrying on business in Massachusetts should observe the legal

requirements established for its own companies, and that its own companies operating elsewhere should conform to the laws of Massachusetts, not those of the states in which agencies had been established. Other states in general allowed outside companies to carry on business according to the laws of the states whence their charters were derived. The great increase in insurance business after the close of the civil war rendered more imperative an approximate unification of insurance statutes, and legislatures, state insurance departments, insurance corporations, and some of the most expert mathematicians in the country labored for this end. The results may be briefly stated: the majority of level premium and natural premium life insurance companies now follow the Massachusetts and New York life standards, with a possible preference for the former, and the majority of fire insurance companies follow the New York fire standard. Where state insurance departments exist, companies are required to deposit a stipulated amount, usually $100,000 to $200,000, with the department, which, known as deposit capital, is held to pay liabilities created in the state in case a company becomes insolvent. Outside companies have to deposit similarly, and generally the maximum amount authorized by the state in which they seek business. All are obliged to submit annual reports in great detail, keep proper reserves, promptly to make good any impairment of capital, and to permit a thorough investigation of their affairs by officers of the departments at stated periods and whenever the public interest or allegations of wrong-doing may demand; and all are liable to be summarily wound up by the departments for fraudulent practices. At first the burdens of State supervision were light, since the companies transacted but little business outside of their home state, but within the last generation the business operations of most of the companies have of necessity been extended to other States and territories. There has, as a result, been developed a vast system of over-supervision, accompanied by an immense amount of over-legislation, much of which is inimical to the highest and broadest development of the business. The position of the commissioner is, as a rule, a political one, subject to the changing fortunes of the parties, and new men have frequently come forward with radical ideas, which, if carried to the extreme, would have resulted disastrously to the companies and their policy-holders.

The taxation of insurance is a difficult problem and a matter of serious concern to the companies. In its final analysis the incidence of insurance taxation falls upon the policyholders and the cost of insurance is correspondingly increased. The fact is overlooked that insurance itself is in the nature of a tax and that additional tax burdens are a needless hindrance to the largest

development of the business. In life insurance alone the annual amount paid in taxes, fees, etc., is not far from $10,000,000 and the proportion of taxes to income is constantly increasing, due to additional burdens placed upon the companies as a convenient source of public revenue. A tax upon premiums is an unjust burden upon the business, and is both inexcusable and unscientific. This tax falls alike upon new premiums for risks just incurred and upon renewal premiums upon risks assumed years ago. Since risks assumed years ago were calculated to produce a certain result on the assumption of a known mortality and 4 per cent. interest, taxes upon premium payments must necessarily and considerably decrease the returns to participating policyholders, and increase, in consequence, the cost of insurance.

*Life Insurance.*—Life insurance is carried on by two distinct classes of institutions. One consists of those which treat it as an ordinary commercial or financial business, the other, of those which deal with it as a form of benevolence or fraternal aid. The former may be again divided into those in which the premiums are definite in their amount and time of payment, and those which depend on assessments from their policyholders to pay claims as they become due. Life insurance as a business, however, is chiefly carried on by the first mentioned, which are known as old line or legal reserve companies. It has been found the only business method which has successfully stood the test of experience. Two systems have been adopted in this class of companies. One is the mutual, in which the policyholders are regarded as the owners of the corporation, and all profits or surplus arising from the business are distributed among them. Such surplus performs the functions of an ordinary captial. The choice of directors or trustees and consequent management of the company is usually placed in the hands of the members. The majority of companies in the United States are conducted on this system. The other is the stock plan, in which the company is owned and controlled by stockholders, who deal with the policyholders simply as customers and divide the profits of the business among themselves. Higher premiums are charged for mutual policies for the purpose of creating a surplus, which may be eventually returned in dividends to the policyholders. In the stock policy, on the contrary, the holder sacrifices the right to dividends in exchange for a lower premium rate. Many of the companies combine both features, mutual offices issuing also stock policies, known as non-participating, at lower rates of premium. Often, too, a stock capital is added to a mutual company which is restricted by the charter to the amount of dividends which it can receive. When the stock is allowed to share in the profits in excess of its legitimate earnings as

an investment, the system is known as the mixed plan. Sometimes, too, the election of directors is apportioned between the stock and policyholders, or, in a company otherwise mutual, may be restricted to the former. In some of the States a capital stock is required by law in the organization of a mutual company until it can be replaced by surplus belonging to the policyholders. The distinctive feature of the legal reserve company, apart from its fixed premiums, is that it must at all times maintain a reserve fund adequate to the payment of its future obligations, less the future premiums which it will receive; in other words, it must in a commercial sense be financially solvent. It is also known as an old line company because conducted on the principles which have always characterized life insurance as a business until the introduction of the assessment plan.

*Assessment companies* were started in the United States over 30 years ago for the purpose of furnishing life insurance at lower rates than those charged by the regular old line companies. Instead of a fixed premium, assessments were levied on the policyholders to pay the losses as they occurred.

At first, the simple plan was to collect from every member, on the death of another, $1, with generally 10 cents for expenses, and to pay to the beneficiaries of the deceased the fund formed from the dollar payments. The benefit was, therefore, indeterminate in amount, as was also the cost. An early modification of this scheme was to divide the members into classes of 1,000 or 2,000, which classes were theoretically to be kept full by the infusion of new blood, which, it was claimed, would, by keeping a level average age, result in a level cost. This theory ignored the fact that death rate depends upon actual, and not average, age.

When the plan of uniform payments began to break, through its practical discrimination in favor of older lives and heavier risks, the plan of graded assessments fixed by the age of admission was adopted. This simply modified the degree of error, by substituting for the assumption that all risks were equal, the equally inconsistent assumption that, after the admission of a member to a society, the risk of death ceased to increase. The scheme thus resolved itself into an attempt to meet the cost of insurance, which increases with increasing age, by a level premium, but without the accumulation of a reserve for the diminution of the risk. The fallacy of this was repeatedly urged by those who understood the scientific principles of life insurance, but obtained little or no effective hearing. Strenuous opposition was developed to the accumulation of a reserve, and a great parade was made of 'the reserve in the pocket,' ready to the call of the company when needed.

The irregular periods for calling assessments gradually merged into periodical assessments at fixed dates,

varying in amount with the number of claims which had accrued since the last preceding call. Then came a tendency to call for an assessment in advance, to provide for death claims to occur, the fund thus accumulated being generally named an 'emergency fund.'

In the meantime, statutes regulative of the business were passed in many States, but in none was any particular regard paid to the demands of a permanent business. In fact, these statutes were in very many instances addressed to securing the advantage of a claim of State supervision, without the imposition of the requirements necessary to permanence. In 1885, however, Massachusetts provided by law that the amount of the benefit must be fixed in the contract, and this provision was finally adopted by New York in 1892.

Finally, as the proportion of older members became heavy, with rapid increase in the cost of the benefits afforded, there came rapid diminution of membership, especially among the younger, and this, in turn, had a tendency to increase the death cost by depleting the character of the risks. The transfer of memberships from one association to another followed in many instances. There was no possibility in such transfers of protecting accumulated liabilities, the result being that claimants under death claims which had accrued received but a small percentage of their face. Later, many of the larger and better managed business organizations passed under the laws regulative of fixed premium insurance with accumulated reserve, and the plant which they had established thus became foundation for new legal reserve companies. In 1899, the State of Massachusetts repealed the law permitting assessment life companies to do business therein, and provided a means by which those then authorized to do business on the assessment plan could obtain licenses under the legal reserve law.

*Stipulated premium insurance* is a combination of the assessment and legal reserve systems with a view to correct the defects of the former. The premiums, as in the old line company, are definite payments, supplemented, if needed, by assessments, and a moderate reserve is carried to reduce or render such assessments unnecessary. It has been employed by some of the assessment companies as a method of establishing their business on a firmer foundation.

*Industrial insurance* is a branch of the legal reserve system designed to furnish burial funds for the poorer classes, and especially children. While in scientific principles it does not differ at all from ordinary life insurance, in practice its distinctive features are: (1) that instead of having its policies written for $1,000 and multiples thereof at varying premiums according to mortality tables, its policies call for premiums of 5 cents and multiples thereof, the amounts of insurance varying

according to age; (2) the premiums instead of being payable annually, or semi-annually, or quarterly, are payable weekly; (3) these premiums are called for weekly by collectors instead of being remitted by mail; (4) the amounts of insurance payable are based upon mortality tables drawn from experience in industrial insurance, and these tables differ very widely at all ages from the tables used by the ordinary companies; (5) the insurance is taken upon lives between ages of 1 and 70, without distinction of sex as to premium, and, in the largest company, without distinction as to color. Industrial insurance is so called because it is the insurance of the working classes. For this reason it has grown very rapidly, and no doubt in time will exceed in amount the annual premium insurance.

The provisions of the policies in industrial insurance do not differ in principle from the annual premium policies. Because of the small premium payable weekly the policies are only in partial benefit during the first year of insurance, that is, one quarter is paid if death occurs within six months, and one-half if death occurs after six months and within a year. The insurance is payable immediately upon receipt of proofs of death; and these proofs are prepared by the companies' agents without charge. The intention of the insurance being mainly to provide for expenses of sickness and death, everything is done to facilitate the payment of the premiums of the company and of the claims to the insured. Collectors call weekly for the premiums; the companies have local offices convenient to the policyholders and from there death claims are attended to and paid either without reference to the home office or on telegraphic instructions therefrom. Four weeks' grace are allowed in the payment of premiums which in practice is usually extended to five weeks, within which time claims are paid even if premiums have not been. Paid up policies are issued after two, three, or five years in different companies. The Massachusetts law provides for two years; the New Jersey law for three years; the New York law does not compel paid-up insurance—but the company grants it nevertheless. Revivals are freely granted in cases of lapsed policies, and where policies have been long lapsed, so that payment of arrears is difficult, the companies loan the amount of arrears on the security of the policies. Special allowances are made in cases of long strikes and lockouts, death claims usually being paid even if policies are lapsed.

*Fraternal and benevolent societies* have been popularly associated with assessment companies owing to the similarity of their methods. But they are a distinct class, having the character of social clubs solely for fraternal or benevolent purposes with a form of insurance as merely one, though it may be their most important, feature. They are strictly mutual in their char-

acter. Their general type of organization is that of the ordinary society or club known as a lodge, whose members meet for social or fraternal purposes. The society is formed of a combination of such lodges, through chosen representatives, into a single grand lodge, by which the insurance is carried on, the subordinate lodges acting the part of agents in securing members and collecting the payments. The insurance itself is simply a death benefit allowed to the members under provisions in the constitution, and not a business contract secured by the purchase of a policy. The premiums are paid in the form of dues and assessments, much after the manner of assessment companies, the dues being used for expenses and other incidental features.

The membership of the various fraternal beneficiary associations in America that report to the insurance departments of the different States is over 4,500,000, and the amount of protection carried is in excess of $7,000,000,000. The various societies have distributed over $1,000,000,000 among the beneficiaries of deceased members. These figures do not include the vast number of small societies scattered through the various States which do not report to the insurance departments. For further information consult: The Annual Reports of the Insurance Departments of the different States, and the Official Reports of the Fraternal Beneficiary Societies.

*Mortality Tables.*—The life or mortality table, from which the premiums must be determined, is at the foundation of the business. The tables mostly employed are constructed from the experience of the companies themselves with insured lives which have been found to have a mortality distinct from that of the population at large. Such a table in its simplest form consists of a statement of the number surviving at the beginning of each succeeding year out of a given number living at any age, from which the number of deaths and percentage of mortality at each age are readily determined. The latter is the important function employed in life insurance. In America the two tables which are chiefly used, and which have been recognized by the various States as standards for determining the liabilities of the companies, are the Actuaries of Combined Experience and the American Table. The former was constructed from the experience of 17 prominent English offices, and was published in 1843. Its general accuracy has since been confirmed by later observations. The American Table was constructed from the experience of the Mutual Life Insurance Company of New York, and came prominently into use about 1868. It was found to represent the actual experience of American companies better than foreign tables which had been employed. Many other mortality tables have been constructed which have attained a recognized standing. Prominent among them were the Northampton and later the Carlisle

Table, both of which were framed from mortality returns of English towns, and were successively used both in England and America, until replaced by the Actuaries' Table. Farr's Tables, constructed from the census returns in Great Britain and published in 1864, have been much used for certain purposes. Various tables, too, have been constructed from observations in other European countries and employed there as standards.

*Premiums.*—The premiums, which must equal the cost of insurance, are computed from the risk of death, as shown by the mortality table; and since the former are usually fixed sums, while the risk increases with age, it is necessary to charge more than the actual cost in the early years in order to offset the deficiency later on. This excess above the cost is accumulated at compound interest by the company, and constitutes its reserve fund. The rate of interest assumed in the calculation is such as the company is justified in expecting will prevail during the continuance of the contracts. In the United States 4 per cent. was formerly considered a safe rate, but the continued fall in interest has led to a general substitution of 3 or 3½ per cent. for newer contracts. The payments, which, when thus accumulated will be sufficient on the average to meet the claims on the policies as they fall due, are known as the net premiums, to which additional sums are added for expenses and other contingencies. When thus loaded they are known as gross or office premiums, and are the real amounts charged by the company. These loadings may vary from a trivial addition to 40 per cent. or more of the net premium, according to the character of the contract. Premiums in ordinary insurance are usually payable annually in advance, and are then known as annual premiums. Frequently the payments are restricted to a certain number or term of years. These are known as limited payments. Sometimes the entire payment is made at the start. This is known as a single premium payment. The annual premiums, too, are sometimes payable in instalments at shorter intervals to suit the convenience of the policyholder.

*Legal Reserve.*—The legal reserve is the measure of an ordinary life company's liability on account of its insurance contracts to which, in addition to any other liabilities, its funds must be equal in order that it may be legally solvent. The process of estimating this reserve is known as valuing the policies. Two methods of valuation are used, known as net and gross, dealing respectively with the net and gross premiums charged. The former is generally employed in the United States, and is the one usually adopted by the State authorities. It consists in determining what fund the company must have in its possession in addition to the future net premiums which it expects to receive in order to meet future claims on its policies. This fund is the net or

legal reserve. It assumes that all other expenditures are cared for by the premium loadings. The gross valuation, on the contrary, deals with the gross or office premiums, and a certain deduction is made from the resulting fund for assumed future expenses. The latter method is regarded as furnishing the surest test of a company's actual condition, and is sometimes employed when the question of legal solvency is in doubt. The former has the advantage of compelling the use of the premiums for the purposes assumed by the company in their computation.

As in the case of the premiums, the computation of this reserve depends on the future rate of interest which is assumed. In most of the States 4 per cent., as in the case of premiums, was formerly regarded as a safe rate, and even 4½ per cent. was at one time allowed, but during recent years 3 or 3½ per cent. has been insisted on in the case of new contracts by some of the States.

The mortality on which the sufficiency of the premium depends is lighter in the case of insured lives, owing to their careful selection, than among the general population or that called for by the mortality table for a number of years after the policy has been issued. The cost of insurance in mutual companies is reduced to the policyholders by this lighter mortality. In American companies the mortality among lives that have not been newly selected remains nearly stationary after age 20, or increases but slightly until age 40 is reached, when it is not far from 1 in 100, increasing more rapidly with each age thereafter until it is about 2 per cent. at age 50 years and 4 per cent. 10 years later.

*Form of Contract.*—Policies may be either participating or non-participating, the chief difference being that smaller premiums are charged in the last and no provisions are included for sharing the profits. Policies for short terms are more frequently made non-participating. The classes of policies most in use are three in number, whole life, term, and endowment. In the first the insurance is simply against death and covers the whole term of life, while in the second it runs only for a certain term of years. The pure endowment is an insurance payable at the end of a certain term of years only in case the insured is alive, and is the reverse of a term policy. The ordinary endowment which is almost exclusively used, however, and which has of recent years largely supplanted the whole-life policy, is a combination of the pure endowment and the term policy. The insurance money is payable to the insured if alive at the end of the endowment period, or to some beneficiary in case of his previous death. Such endowments are usually issued for periods of from 10 to 30 years.

The annuity is a contract frequently combined with life insurance in which the life insurance principle is

reversed. The purchaser buys outright a contract under which he is to receive an annual payment during life. Annuities have been familiar since an early period, and before life insurance became understood was the principal form of contracts dealt in by this class of companies. It secures a fixed income during life to those who may wish to surrender their capital for that purpose.

Still another form of contract is the tontine, in which the funds of a body of subscribers are pooled and the accumulations are divided among the survivors after a certain time. Societies of this kind were formerly common in Europe and were occasionally found in the United States, though few, if any, remain.

All these different contract forms are now frequently combined in various ways in the ordinary life policy, in order to increase its attractiveness or to better meet the requirements of policyholders. Various methods of premium payments and of paying dividends are also combined for the same purpose. Great ingenuity has been displayed by the companies in making these combinations, and an almost innumerable variety of contracts have resulted. Among those more familiar in the United States are the tontine or deferred dividend policies, in which dividends are accumulated and divided among the surviving policyholders after a certain period; limited payment policies, in which the premiums are limited in number; instalment policies, in which the insurance money, instead of being payable in a single sum, is converted into a series of annual payments as an annuity; and debenture bonds, which are similar to instalment policies, except that the insurance money is represented by a bond bearing an annual interest and payable at the end of a certain time. Besides, there are policies insuring the life of more than one party. When they are payable upon the death of either of the parties insured, they are known as joint life insurances; when payable only on the death of all they are survivorship insurances. The greater part of business in the United States is written either in the form of continued payment life, 20-payment life, or 20-year endowment insurance. Renewable term insurance is another plan for reducing the cost of insurance during the early years and avoiding the accumulation of a reserve. The premium is only sufficient to pay for the temporary cost of insuring and increases with age. The policies are written for a single year or term of years, with the right to renewal at the increased premium. The subsequent increase of cost, however, has been found a serious obstacle to the plan. Preliminary term insurance is also insurance for a single year, but with a right of renewal for the entire period at the same rate of premium. The object of such policies is to enable the company to use the fund which, under law, must otherwise be added to the reserve

during the first year of insurance to meet the cost of securing the business, and is a favorite method with young companies having a limited surplus.

*Dividends.*—Dividends are apportioned from the accumulated surplus according to the equitable share of each policy. Many different methods of determining this share have been devised. That chiefly employed in the United States is what is known as the Contribution Plan. The surplus is treated as made up of gains from a lower mortality and expense and a larger interest earning than those assumed in computing the premiums, and the contribution of each policy to the fund is estimated. Dividends are applied according to the provisions in the policy in various ways. They may be used as single premiums to increase the amount of insurance, which is called a bonus addition, or to shorten the term of insurance, or to the payment of the premium, or may be received in cash. When, as in tontine dividends, they are to be apportioned among a special class, the share of surplus belonging to that class is separately dealt with. Sometimes a minimum future surplus earning, which can be relied on, is made the basis for guaranteeing the payment of a certain dividend in the policy. But as such earnings are uncertain, the usual estimates of these amounts, as given by the companies, are simply expectations and not obligatory as promises. The fall of interest rates has tended to reduce dividends during recent years. At an earlier stage of life insurance, dividends were payable at intervals of five years or more. Afterward, as the business became better understood, the practice of declaring annual dividends in the United States became universal. Of late, however, the introduction of deferred dividend policies has again lengthened the distribution periods among these special classes. Notes were at one time received by many of the companies in part payment of premiums, but the practice has been for the most part abandoned.

*Termination of the Contract.*—The life insurance contract is terminated either by becoming a claim, which is usually payable at once after satisfactory proofs have been furnished, or by previous lapse or forfeiture through a violation of its conditions, especially non-payment of the premium, or through a voluntary surrender. Policies usually provide for their surrender and allow the insured to receive back a large part of the reserve held against them, called the surrender value, either in the form of paid-up insurance for such an amount as this value will purchase, or insurance of the original amount as this value will purchase, or insurance of the original amount for such a term as it would pay for, called extended insurance, or else in the form of cash. Statutes in many of the States require similar returns in case of lapse for non-payment of premium, and such provisions are also usually incorporated in the policies.

Non-forfeiture laws, as these statutes are called, are designed to prevent the assumed hardship or injustice entailed on the insured through the forfeiture of the money standing to his credit in the reserve fund. This money is regarded as a saving bank accumulation for his future benefit, which is in a sense his property and which should be restored after reserving a surrender charge to compensate the company for his loss. Since healthy lives are most likely to lapse and the cost of insurance to be made greater for those who remain, the selection against the company, as it is termed, is an important element in determining the surrender charge.

*Sub-Standard Insurance.*—Parties who may not be seriously diseased and yet who are not insurable as healthy lives, on account of constitutional weakness or predisposition, are known as sub-standard or under average lives and are insured by some companies as a separate class under special rates of premium, or under special policy conditions, according to the defects of each applicant.

*Personal Accident Insurance.*—An accident policy is a contract of insurance against loss of life, limbs, sight, or time through bodily injuries affected solely by external, violent, and accidental means. The full amount of the policy is payable in case of death, or for the loss of both hands or both feet, or both eyes, or one hand and one foot. Proportionate amounts are payable for the loss of one hand or one foot or one eye, and a fixed sum is payable per week during the term of temporary disability.

*Liability Insurance.*—The liability policies of the present day are substantially the same with all companies, and are known respectively as Employers' Liability, Public Liability, General Liability, Teams Liability, Elevator Liability, Owners' Contingent Liability, Theatre Liability, and Marine Vessel Liability. The premium is based, in most cases, on the estimated annual payroll of employees, and is subject to adjustment at expiration of the policy according as the actual payroll expended is greater or less than the amount estimated. To ascertain this, the assured is required to render a payroll statement to the company which is usually verified by an audit of the assured's books.

Under the various forms of policies issued, protection against legal liability for damages on account of accidental death or injuries to employees and the public is afforded to manufacturers, and contractors, owners, lessees, and tenants of buildings; to owners and users of horses and vehicles, including automobiles, elevators, vessels and boats; to theatres, agricultural exhibitions and shows, and to owners and general contractors of buildings in course of construction. While at first the limits of liability were rarely in excess of $5,000 for one person injured or killed and $10,000 for two or more persons injured or killed in any one accident it is now

quite common to provide double these limits and in fact the indemnity is often fixed at limits of $10,000 for one person and $50,000 for a number of persons injured or killed in one accident. These increased limits are due not only to the inevitable tendency of the courts in the majority of States to sustain verdicts for large amounts, but more particularly to the enactment of laws increasing and extending the liability of employers and others in cases of negligence. For example, in New York State the statutory limit for damages in case of fatal injury from negligence was $5,000 for an individual until this limit was removed by the legislature a few years ago, leaving the amount recoverable in such cases unlimited. In Illinois, likewise, the sum of $5,000 was formerly the maximum amount payable, but an act of 1903 increased the individual limit to $10,000.

*Steam Boiler Insurance.*—There are now nine companies engaged in the business of the insurance of boilers, tanks, dryers, rotaries, digesters, and other objects operated under steam pressure. Nearly 150,000 boilers are regularly inspected and a small army of inspectors are maintained by the various companies at an annual expenditure of several hundred thousand dollars. Policies are frequently issued for as much as $100,000 limit for any one loss, and a limit of $50,000 is quite common. Notwithstanding the great number of objects insured annually, and the large limits of liability as above mentioned, serious explosions have been comparatively rare, and the average loss ratio of the largest company for 35 years has not exceeded 10 per cent per year. This showing would seem to indicate that there is an exceptionally large profit to be made in this branch of casualty insurance, but such is not the case, for owing to the inspection system before mentioned, the management expenses range from 60 to 85 per cent of the premium income. Some of the companies maintain in connection with the inspection department, a force of draughtsmen for the purpose of furnishing plans and specifications for new boilers, at the request of their policy holders or of prospective clients. This service is rendered without charge and adds somewhat to the already heavy expense of conducting the business.

*Plate Glass Insurance* provides indemnity on account of loss or damage caused by breakage of glass, provided that such breakage is the result of accident and due to causes beyond the control of the assured. No claim is paid, however, for breakage resulting directly or indirectly from fire, earthquake, inundation, insurrection, riot or any military or usurped power, or from the blowing up of buildings or from alterations or repairs to the premises. While for years the insurance was limited almost entirely to what is known as plain plate glass, many different kinds of glass, such as bevelled, mitred, cathedral, leaded, chipped, bent, Florentine, jewelled,

ribbed and wired glass are now insured freely by all companies.

In 1900 plate glass underwriters were confronted with an entirely new proposition in the shape of clamped or patented plate glass, resulting from riveting the sides and tops of plate glass together without the use of wooden frames that before that time had been indispensable. The rates formulated for patented glass were at first entirely inadequate and the companies lost a considerable sum while experimenting with the subject. Not only was there great trouble and delay in having broken glass replaced, but the patentees, having a monopoly, were disposed to secure the full benefit from the product of their ingenuity. As a result of these conditions, the companies placed an almost prohibitive rate on all patented glass in the hope that they could successfully taboo that kind of risk, but the public demand for it was too great and patented glass has come more and more into general use. However, near the close of the year 1903 the leading companies found that the experience with patented glass had been more favorable than had been anticipated, and, as a result, the rate was materially reduced.

*Sprinkler Leakage Insurance.*—While not constituting one of the main divisions of casualty insurance, this form of policy is written to a limited extent by two of the casualty companies, as well as by some fire insurance companies. The contract covers loss or damage to the building and contents caused by the accidental discharge or leakage (except from fire) of the sprinkler equipment erected in or on the premises. The premium, based at a varying rate, depending on the class of merchandise covered, is predicated upon a certain percentage, usually 10 per cent, of the cash value of the building, stock, and machinery.

*Fly-wheel Insurance.*—This is one of the less important branches of casualty insurance and is of recent origin in this country. One company alone is engaged in the business at this time, and hence the statistics are limited. The contract covers loss caused by the explosion, bursting, or disruption, during rotation of the fly-wheels or any of them, first for loss upon the fly-wheel or fly-wheels and upon other property of the assured; second, for loss from liability of the assured for loss upon property of any other person or persons; third, for loss from liability of the assured for bodily injuries or death sustained by any person or persons. Fly-wheel insurance is more or less allied to boiler insurance, and the limits of the company's liability in case of loss, as well as the rates of premium and the methods of handling the business, are very much the same as in boiler insurance. The insurance against breakage of machinery in general is being introduced to some extent in one or two European countries, but has not yet been attempted in America.

There appears to be a field for such a policy, and doubtless the indemnity will be offered by some American company before very long. In fact, at the present time, a few corporations are engaged in the business of insuring the maintenance of electric machinery and of making the repairs found necessary from a periodical inspection of the premises or plants.

*Physicians' Liability Insurance.*—This is another of the modern schemes in casualty insurance, and provides indemnity against loss from common law or statutory liability for damages on account of bodily injuries fatal or non-fatal suffered by any person or persons in consequence of any alleged error, mistake, or malpractice by the assured in the practice of his profession. The limits of the company's liability are uniformly $5,000 for one person injured or killed, and $10,000 for any number of persons injured or killed during the term of the policy. Naturally, the moral hazard is the main consideration in a contract of this nature, and, while a fixed premium is charged, a careful selection is made by the conservative companies of the risks offered.

*Buglary Insurance* in its essential details and in its scope is similar to other forms of casualty insurance and needs no extended exposition.

*Marine Insurance.*—The scope and definition of a marine policy is, of course, entirely different from a land fire policy. The risks insured against are many, and may be summarized as including all perils of the sea. There are two classes—a voyage and a time policy; the former is generally used in insuring vessels, and the latter for cargoes. There are naturally many clauses governing marine-insurance policies, such as capture, seizure, war, and so on. The life of the insurance on a ship begins at the port from which it is insured until moored for 24 hours at the port to which it is insured. When an insurance is made on freight to be carried under a charter, the policy attaches as soon as the vessel sails, although she may be destined to a distant port for her cargo.

*Statistics.*—At the beginning of 1905 there were 93 'old line,' or 'level premium' companies, doing business in the United States, a few confining their operations to a particular section, but the majority of them seeking business in all the States. Of this number 84 had 3,269,089 whole life policies outstanding, insuring the lives of their owners in an aggregate amounting to $6,767,197,991, while the total insurance in force (including endowments and other forms of policies) amounted to $10,412,078,338. The 93 companies were organized at different times and several of them have not been in business long enough at this writing to have made a record. The total premium receipts of 79 of the companies since their organization amounts to $5,214,441,446; they have paid to policyholders $3,276,051,697; their present

assets held for the protection of policyholders are $2,261,851,182. As these companies operate on the mutual plan, all the assets belong to the policyholders; if the assets on hand be added to the amount paid to policyholders it gives an aggregate of $5,537,902,879, exceeding the amount paid in premiums by $323,461,433. In other words, the companies have paid to policyholders or now hold for their protection $106.20 for every $100 they have received in premiums.

In 1904 the total premium income of 79 companies was $378,118,121, most of this being in cash for new policies issued and for renewals on old policies.

In some States the law requires that a life insurance company, before beginning business shall have a certain amount of capital paid up, for the protection of its policyholders, but before the enactment of such law, some companies were organized on the purely mutual plan, without capital. Of the 102 existing companies, including the latest additions to the number, 38 are mutual, while the others possess capital varying from $25,000 to $2,000,000. Dividends to stockholders are generally limited to 7 per cent, all profits in excess being apportioned among the policyholders. In 1904 the capital stock of all the stock companies amounted to $16,919,930; the dividends paid to capital were $916,824, while dividends to policyholders were $33,579,020. In 1905 there were 5,621,417 ordinary policies in force carrying $11,054,255,524 insurance and 16,872,583 industrial policies carrying $2,309,754,235 insurance, or a total of 22,494,000 policies carrying $13,364,009,759 insurance. The total income of the life insurance companies was $642,058,530; total payments to policyholders amounted to $264,968,883; the total assets were $2,706,186,867; total liabilities $2,372,573,020; and total surplus $333,613,847. The total income of the 95 casualty and miscellaneous stock companies in 1905 was $63,190,680 and their payments to policyholders amounted to $21,646,844.

*Fire Insurance.*—The business of fire insurance in the United States may be roughly divided into three classes—that carried on, first by the stock companies, second by the mutuals, and third by the factory mutuals. By far the greater part of the risks insured are written by the companies in the first of these classes. As there is no one State in the Union in which all of the fire insurance companies, both foreign and American, carry on a regular business and hence make official reports, it is not possible to determine the exact volume of business transacted. The business for 1905 may be stated approximately as follows: Companies, 363 stock and 234 mutual, not including a few small stock and mutual companies whose business is purely local and of small volume; capital $76,128,021; assets exclusive of premium notes $550,152,373; net surplus $215,090,671; cash pre-

miums received during year $273,416,651; total cash income during year $296,333,255; losses paid during year $126,295,949; dividends paid during year $23,231,673; total disbursements $243,619,597; risks written during year $30,000,000,000. Those American companies that have the largest share in this business are corporations having their chief offices in New York, Philadelphia, and Hartford, the capitalists of the last-named municipality showing an aptitude for this class of business, as clearly specialized as is that of the manufactures of Fall River or Pittsburg.

Under present conditions a stock fire insurance company organized to carry on a profitable as well as safe business has to cover in its writtings a widely extended field of operations. One of the large companies of New York which reported the value of risks written at more than $1,000,000,000, had only a little over $200,000,000 at risk in the State of New York, the rest being scattered in thousands of cities and towns between the Atlantic and Pacific oceans. To successfully carry on a business of this magnitude and detail requires a carefully arranged organization. By the method commonly adopted the country is divided by State or sectional lines into the desired number of districts, each of which the company places under the control of a salaried official who has his headquarters at some convenient and central point in the designated territory. The duties of this manager or special agent are chiefly those of supervision. The company has its local agents, whose remuneration usually consists of a commission based on the premiums received for risks written by them.

But the desire to secure premiums, upon which commissions can be earned, may lead the local agent to take risks on behalf of his company, that the shareholders of the latter might afterward discover were far from profitable, hence the duty of the special agent is to check this possible recklessness, as his standing with his company superior is determined less by the volume of premiums that the company receives, than by its relatively small loss ratio in the district over which he exercises supervision. The risks written by the local agents have commonly to undergo the supervision of the special or general agent, and the criticism of the supervising officials at the home office before they are permanently accepted; for the ability to judiciously cancel policies that local agents have written is a factor in the line of corporate success quite equal in its results to the ability to secure desirable business.

Almost all the fire insurance companies doing business in this country keep what they term their tables of experience, upon which corporate policy is largely based. In the case of companies doing a large and diversified business, such loss records must be of great value, and yet it is well known that there is a material want of

uniformity in these experiences. The records of one company may show that it has made an extraordinary profit by insuring wood-working risks, while the experience of another company doing a business of equal magnitude and diversity, may be wholly the reverse of this, and indicate a loss ration in this class far in excess of the entire premiums received for insuring these risks. While efforts have been made to combine the experiences of a number of the leading fire insurance companies, it cannot be said that the data thus obtained can be depended upon to do more than serve as guides for general action. A property which might for a variety of reasons be considered extremely hazardous in one place,—as, for example, a distillery in a locality where public sentiment strongly opposed the use of intoxicating liquor—might in another district be thought a highly desirable risk for a company to have upon its books. Fires occur with great frequency in consequence of human carelessness and shiftlessness, which are not only individual, but sectional in their manifestation; for as a rule, those in this country who live in the northeastern States are found to be more careful in keeping the premises that they occupy in good order than are those who live in the southern or western States. Then what may be fairly termed the element of luck enters largely into the complications, as it often happens in local experience, where two insurance companies are represented by the same agent, that the loss ratio of one will be exasperatingly high, while that of the other will be phenomenally low, although the agent may have exercised his best judgment in writing the risks for each of the two corporations that he represents. It will thus be seen that in determining the question of cost, that is, what constitutes an adequate rate to be charged for insuring a risk, the fire insurance companies cannot depend as the life insurance companies can, upon fairly well-settled bases of liability. They have nothing that corresponds in scientific accuracy to the actuaries' tables of mortality. The most hazardous risk may never burn, the one which appears least hazardous may be destroyed by fire within a few hours after the policy upon it has been issued, and there has not yet been formulated any generally accepted table of loss averages.

Fire insurance companies have in all cases their lists of prohibited risks, though there is no uniformity in these prohibitions, for in practice nearly all risks can be insured in one company or another; but they do endeavor to make the rates that they charge correspond to what they believe to be the probability of loss. This, under the most favorable conditions, is largely a rule of thumb, for though schedules for rating mercantile risks and special hazards have been prepared, drawn up as the outcome of combined personal experiences, it cannot be said that these are based upon entirely reliable

data. The rates arrived at by these schedules are no doubt far superior to the personal guesses of the earlier underwriters; but they lack in a large degree the scientific certitude of life insurance rates determined by actuaries' tables of mortality. One advantage which has come from the use of the schedule system of rating, in addition to the effacement of personal prejudice in rate making, is the penalization of recognized defects in the risks thus classified. For example, in the construction of buildings certain bad methods, such as the maintenance of vertical openings through the floors, or in the processes of manufacture the use of explosive or largely inflammable materials, can be prevented if heavy, specific charges are imposed in the insurance rates for such needless hazards. The schedule charges ordinarily made for such defects are presumably greatly in excess of the real hazard, and are intended to bring about correction, rather than an adjustment of rates to actual conditions.

These movements toward uniformity and system are only made possible by the union of the larger part of the fire insurace companies in local and national organizations. The practice of corporate combination, in agreeing on a scale of prices, seems inevitable in a business where the cost of the service rendered can never be predicted in any individual instance, and only roughly so in a great aggregation of instances. A company may receive $100 for agreeing to indemnify a property owner to the extent of $10,000 for any loss by fire that he may sustain during a year, and may not during the term of the policy be called upon for a penny of contribution, the premium in this case representing unqualified profit. But another policy, written under the same conditions, might lead to a demand upon the company for a payment a hundred times greater than the amount of the premium. Thus the speculative character of these transactions, when considered individually, is alarmingly great, and it is only by collective action that it is possible to bring them within the range of a reasonable business system. The necessity of co-operation through combination has been recognized wherever the business of fire insurance has been carried on, in the countries of the Old World no less than in the United States. In this country boards of underwriters have been organized whenever the property to be insured has been sufficient to justify the formation of more than one locally incorporated fire insurance company, or to warrant the establishment of local agencies by a dozen or more insurance companies having their corporate headquarters in other places.

It is the business practice of all of the companies that insure fire risks in this country to insist that the assured shall either insure his property to eight tenths of its value or shall pay an increased rate for the protection

that his policy gives to him. This rule does not, however, apply to dwellings and their contents which are ordinarily considered an exceptionally desirable class of property to insure.

The usual term of a policy is one year. If written for a shorter time the rate charged is considerably higher than what would be the pro rata of the annual rate. In the case of buildings, and dwellings and their contents, it is often the case that policies are written for a term of five years, the rates in these cases varying, according to local custom, from three to four times the annual rate. In Philadelphia, and possibly elsewhere, the custom has been in use for many years past of insuring dwellings by what are called perpetual policies, the company insuring these agreeing, in consideration of a capitalized payment of premiums, to insure the property forever without calling for a further contribution on the part of the assured.

Considered in its broader aspect, all fire insurance is carried on upon the mutual basis, for the stock companies do not intend to pay fire losses from their capitals, which are held as reserves to meet some great catastrophe. The stock underwriter collects premiums from a large number of property owners and uses these for the purpose of paying the fire losses which come to a few of those whom he insures. Under the purely mutual system the companies have no capitals belonging to stockholders, for all of the corporate assets are the property of the policy holders for the time being, who when they take out their policies obligate themselves to pay upon demand, in addition to whatever premium they then pay, such further sums as may be necessary to make good their share of any exceptional loss that the company may sustain, this contingent liability being usually limited so as not to exceed two, three, or four times the sum of the original premium. If the business transactions of the company are carried on upon a low loss ratio, the profits, after deducting the expenses and salaries of the company officers, are paid back to the policy holders in proportion to their original premium contributions.

This is an entirely equitable method, and when the business carried on is confined to isolated risks of a non-hazardous character, the result has frequently been eminently satisfactory. By this means the expense of fire insurance has been reduced to what it has actually cost, and when limited to a few classes of risks, such as dwellings and their contents, or unexposed buildings occupied for stores and dwellings, it has been possible to establish rates of premium which have been reasonably fair to all participating policy holders. When, however, the mutual method has been more widely extended, so as to take in a great variety of risks, the possibility of very large losses, and the uncertainty of

whether each policy holder has contributed his fair and proper share to the general fund, has militated against the efficacy of the plan, and in many instances has brought about bankruptcy of the too adventuresome corporation. There are successful companies of this mutual type to be found in all parts of the United States, but for obvious reasons their range of business is greatly circumscribed.

The system of fire insurance applied by the so-called factory mutual company is a distinctly American outgrowth of the ordinary mutual method of providing indemnity for fire losses. The first company of this type established was the Providence Manufacturers' Mutual Fire Insurance Company, which was incorporated in 1835; but there are now 19 companies of this class in the eastern section of the United States, and others which somewhat correspond to them in the South and in the Mississippi valley area. These companies were the outgrowth of the belief on the part of certain manufacturers that the stock companies were charging for insurance protection unwarrantably high rates, and that it would be better for these manufacturers to try the plan of insuring each other. If they had restricted their services within the then understood range of insurance work, their operations would not have been attended with material consequences. But from the outset, and with increasing earnestness as time has gone on, the officers of these companies have insisted, that the duty of paying fire losses was only one, and the less important function which these companies had to perform, and that the work of preventing fire losses was the service to which attention should chiefly be given.

The results which a consistent enforcement of this theory have secured, have been unparalleled in the experiences of fire insurance, either in this country or elsewhere. The risks protected by the policies of the factory mutual companies would be ordinarily classed as specially hazardous. Cotton, woolen, and paper mills, rolling mills, iron foundries, and the like, are not hazards that the stock underwriter ordinarily views with favor, and yet as the result of thorough, periodical inspections, of bringing to the attention of the manufacturers the advantages of certain improvements and of securing the co-operation of the latter in introducing and applying these, the probability of fire loss in these risks has been brought down nearly to the level of the fire hazard in ordinary dwelling houses.

*Bibliography.*—Insurance has a literature of its own and a most interesting history extending over more than four centuries. The limitations of this article preclude more than a brief reference to the more recently published works, among which, however, may be mentioned Willett, *Economic Theory of Risk and Insurance* (New York 1901); the Yale Insurance Lectures 2 vols., (New

York 1904); Alexander, *The Life Insurance Company* (New York 1905); Young, *Insurance* (London); Dean, *Fire Rating as a Science* (Chicago 1901); Phelps, *History of American Insurance During the Last Decade* (New York 1904); Vance, *Handbook of the Law of Insurance* (1904); Wolfe, *Investments of Insurance Companies* (New York 1905). These are but a few of the many books on insurance which have been published during recent years. In addition there are the Insurance Year Books on life, fire, and miscellaneous insurance, published by The Spectator Company, New York, the annual reports of insurance commissioners, some of which contain critical observations on insurance problems of the day, the annual proceedings of underwriters' associations, and the national conventions of insurance commissioners, the special publications of insurance companies, their histories, etc., the discussions on State supervision and Federal regulation of insurance, of which the two more important are an address by John F. Dryden, president of the Prudential Insurance Company of America (1904), and a report of the Committee of the American Bar Association on Insurance, by Ralph W. Breckenridge, chairman, Omaha, Neb. (1905). But the chief source of information regarding insurance practice, the progress of the business, the organization of companies, etc., is to be found in the technical and general insurance periodicals, the *Insurance Monitor*, *The Spectator*, the *Weekly Underwriter*, and the *Insurance Press*, of New York, the *Baltimore Underwriter*, of Baltimore, the *Standard*, of Boston, and many others. The principal publishers of works on insurance are The Spectator Company, New York, and C. and E. Layton, London.

INSURE, v. *ĭn-shôr'* [used for OF. *asscurer*, to insure or assure, by substituting *en* or *in* for *a: in*, intensive, and Eng. *sure:* L. *sēcūrus*, secure, safe]: to engage to make good to another the loss, as by fire or at sea, of any specified property, at a certain rate per cent; to engage to pay a certain sum on the arrival of some event, as on the death of a person or the loss of property by fire. INSU'RING, imp. INSURED', pp. *-shôrd'*, secured against loss. INSU'RANCE, n. *-shô'răns*, the act of insuring; a contract entered into to secure against loss arising from fire, etc., in consideration of a certain annual payment; the premium or money paid for insuring. INSU'RABLE, a. *-ră-bl*, that may be insured against loss or damage. INSU'RER, n. *-rẽr*, the person who insures; one who engages to make good the losses of another. INSURANCE BROKER, an intermediate agent who acts between the insurance offices and those wishing to insure, as upon ships, the cargo, passengers' effects, etc. INSURANCE COMPANY, a joint-stock association or company which engages to secure against loss by fire, by ship-wreck, etc. INSURANCE POLICY, the document or

contract given by an insurance company to a person who has paid the premium, as a guarantee that it undertakes the risk. INSURANCE FOR AID IN SICKNESS, see FRIENDLY SOCIETIES. *Note.*—In the use of these and related words, *insure* refers to the periodical payments of a sum of money during life in consideration of a certain large sum being paid to relatives at death; *ensure* is to make sure or certain, and no one can make certain of his life: *assure* and *assurance* are now in *Great Britain* usually restricted to life, and *insure* and *insurance* to fire; in the *United States*, the usage is not uniform: *assure* is correctly applied to a person only, and not to a thing, as I *assure* you, I make *sure; assurance* is the state of mind of a person made *sure: Note.* —Strictly speaking the phrase 'insure your life,' is a misnomer. Life cannot be insured, because it cannot be replaced. The company insures against loss of income, which otherwise would be caused by the death of a bread-winner.

INSURGENT, a. *ĭn-sėr'jĕnt* [L. *insurgens*, or *insurgen'tem*, rising up, or raising one's self up—from *in*, in; *surgō*, I rise: Sp. *insurgente*, an insurgent: F. *insurgents*, insurgents]: rising in opposition to lawful authority: N. one who rises in arms against lawful authority. INSUR'GENCY, n. *-jĕn-sĭ*, the act of rising against lawful authority.

INSURMOUNTABLE, a. *ĭn'sėr-mownt'ă-bl* [*in*, not, and *surmountable:* F. *insurmontable*]: that cannot be surmounted or overcome. IN'SURMOUNT'ABLY, ad. *-blĭ.*

INSURRECTION, n. *ĭn'sėr-rĕk'shŭn* [L. *insurrectus*, risen up—from *in*, against; *surgō*, I rise: F. *insurrection*]: the active and open hostility against any constituted government or authority by a considerable number of persons; a revolt. IN'SURREC'TIONIST, n. one who favors an insurrection. IN'SURREC'TIONARY, a. *-ėr-ĭ*, or IN'SURREC'TIONAL, a. *-ăl*, pertaining or tending to insurrection.—SYN. of 'insurrection': rebellion; sedition; revolution; mutiny. In the United States, power to suppress insurrections by employing the militia is given to Congress by the Constitution, Art., I., Sec. 8, Clause 15. In 1792 and 1807 acts were passed giving the President power to call forth the militia when notified by an associate justice of the Supreme Court or a district judge that the execution of the laws is obstructed, and on application of a legislature or a governor, when the legislature could not be convened, and to employ also the land and naval forces of the United States. The Whiskey Insurrection (q.v.) was directed against the Federal authority and the President employed force to suppress it on notification by the Federal judge. During the Buckshot War (q.v.), in 1838, between the Whigs and Democrats in Pennsylvania, the governor of that State asked for assistance, but it was refused.

The governor of Rhode Island made a similar application during the Dorr Rebellion (q.v.) and the regulars were held ready for action, but their aid proved unnecessary. These last two cases came under Art. IV., Sec. 4, of the Federal Constitution, which provides 'that the United States shall protect' each State on application of the legislature, or of the executive, against domestic violence.

When the Civil War began the President was obliged to take prompt steps in calling out the militia, though no application had been made to him as required by the acts of 1792 and 1795. His action was justified by Art. II., Sec. 3, of the Constitution, providing that 'he shall take care that the laws be faithfully executed,' but Congress on 1861, Aug. 6 formally validated and made legal all of President Lincoln's previous acts, proclamations, and orders. The Force Bill (q.v.) of 1871, April 20 gave the President special power to use military force in certain contingencies. In the South during the reconstruction period, and in the North, during strike riots, Federal troops have been used.

INSUSCEPTIBLE, a. *ĭn'sŭs-sĕp'tĭ-bl* [*in*, not, and *susceptible*]: not capable of being moved or affected; not capable of admitting. IN'SUSCEPTIBIL'ITY, n. *-bĭl'ĭ-tĭ*, want of capacity to feel or perceive.

INTACT, a. *ĭn-tăkt'* [F. *intact*, whole—from L. *intactus*, untouched—from *in*, not; *tactus*, touched]: untouched; uninjured.

INTAGLIATED, a. *ĭn-tăl'yā-tĕd* [It. *intagliare*, to carve in, or into relief—from mid. L. *in*, in; *talĕārĕ*, to destroy by cutting]: engraved or stamped on. INTAGLIO, n. *ĭn-tăl'yō* [It.]: stone or gem in which the design is cut or hollowed out—not raised, as in a *cameo*. In *art*, a term the opposite of relief, denoting the representation of a subject by hollowing out a gem or other substance; so that an impression from the engraving has the appearance of a bas-relief. INTAGLIO RELIEVATO, *-rĕl'ĭ-vâ'tō* [It. *rilevato*, relief, swell]: a peculiar kind of intaglio practiced by the anc. Egyptians, in which the highest parts of the figure were on a level with the original surface of the stone.

INTANGIBLE, a. *ĭn-tăn'jĭ-bl* [*in*, not, and *tangible*]: that cannot or may not be touched; not perceptible to the touch. INTAN'GIBLY, ad. *-blĭ*. INTAN'GIBLENESS, n. *-bl-nĕs*, or INTAN'GIBIL'ITY, n. *-bĭl'ĭ-tĭ*, quality of being intangible.

INTAPHERNES, *ĭn'tâ-fĕr-nēz:* one of seven Persian noblemen who conspired against Smerdis after he had usurped the crown of that country. After the death of Smerdis, he was so disappointed from not obtaining the crown that he fomented an insurrection against Darius, who had succeeded to the throne. Being arrested, he and all his family were sentenced to death; but his wife gained the compassion of Darius by frequent

visits to the palace, and received his pardon and promise to save from death any one of her relations she might select. To the king's astonishment she chose her brother, on the ground that while she could have another husband and more children, she could never have another brother, as both her parents were dead. Declining a second opportunity to select, the king released the brother, and Intaphernes with the rest of the family was put to death.

INTEGER, n. *ĭn'tĕ-jĕr* [L. *intĕgĕr*, untouched, whole: F. *intègre*, whole, incorruptible: It. *integro*]: a whole number, in contradistinction to a fraction; the whole of anything.

INTEGRAL, a. *ĭn'tĕ-grăl* [F. *intégral*—from mid. L. *integrālis*—from *intĕgĕr*, whole]: whole; entire: N. a whole; an entire thing. IN'TEGRALLY, ad. *-lĭ*. IN'TEGRANT, a. *-grănt* [F. *intégrant*—from L. *integran'tem*, making anew]: making part of a whole; necessary to form a whole. INTEGRAL CALCULUS, n. *-kăl'kū-lŭs* [L. *ealeŭlus*, a pebble]: branch of the higher mathematics, occupied partly with the summation of very small quantities (see CALCULUS). INTEGRATE, v. *ĭn'tĕ-grāt* [L. *integrātus*, made anew or afresh]: to renew; to make up, as a whole; to make a thing entire. IN'TEGRATING, imp. IN'TEGRATED, pp. IN'TEGRA'TION, n. *shŭn*, the act of making entire: also see CALCULUS.

INTEGRAL, INTEGRATION. See CALCULUS.

INTEGRATING METER. See ELECTRICAL MEASURING INSTRUMENTS.

INTEGRITY, n. *ĭn-tĕg'rĭ-tĭ* [F. *intégrité*—from L. *integrĭtātem*, completeness, perfectness]: the entire or unimpaired state of anything; uprightness; honesty.—SYN.: sincerity; probity; virtue; rectitude; uncorruptedness; purity; entireness; wholeness; soundness; genuineness.

INTEGUMENT, n. *ĭn-tĕg'ū-mĕnt* [L. *integŭmen'tum*, a covering—from *in*, in; *tĕgō*, I cover: It. *integumento*: F. *intégument*]: that which naturally covers or invests another thing, as the skin covers the body; in *bot.*, the external cellular covering of plants. INTEG'UMEN'TARY, a. *-tĕr-ĭ*, pertaining to or composed of integuments.

INTELLECT, n. *ĭn'tĕl-lĕkt'* [F. *intellect*—from L. *intellectus*, discernment as by the senses—from *inter*, between; *legĕrĕ*, to gather, to collect—*lit.*, that which has power to choose between]: the understanding; the thinking principle; the faculty of the mind which receives or comprehends ideas communicated to it. IN'TELLEC'TION, n. *-lĕk'shŭn*, the act of the understanding. IN'TELLEC'TIVE, a. *-tĭv*, able to understand; perceived only by the understanding. IN'TELLEC'TUAL, a. *-tū-ăl* [F. *intellectuel*—from L. *intellectŭālĭs*]: pertaining to the intellect or mind; mental; having the power of understanding: N.

in *OE.*, the understanding; the mental powers or faculties. IN'TELLEC'TUALLY, ad. *-lĭ.* IN'TELLEC'TUALIST, n. one who overrates the understanding. IN'TELLEC'TUALISM, n. *-ĭzm*, the mere culture of the understanding; system of doctrines connected with the intellect.

INTELLECT, in philosophy and psychology: understanding, capacity or faculty for thought; sometimes used in a broader sense to include sensation as well as the higher functions of the mind. The earlier and more common use of the word grew out of a distinction made by John Locke and other early modern psychologists who regarded sensation as supplying material to be worked over and built up by the intellect. This set sensation over against the higher powers of the intellect. The historical use of the word thus tends to limit it to the capacity for thinking or conceiving. As the mind is now more frequently treated as an organism in which all of the functions are mutually dependent, and as pure sensation is impossible for the adult human mind, the antithesis between sensory and intellectual processes is of less importance. When the distinction is made, the intellect refers to a more advanced stage of evolution than sensation. The intellect in the narrow sense, includes reasoning, conception, imagination, and memory. These processes, together with sensation and perception are the means by which man obtains knowledge. Besides this cognitive or knowing aspect of the mind there are two other aspects not referred to in the term intellect, viz: affection or feeling, and volition or willing. A person might have a strong intellect and still be abnormal in will or emotions, although a disturbance in any one function of the mind would be likely to disturb the others.

INTELLECTUALISM, in philosophy: theories which emphasize the intellect as contrasted with the affective and volitional aspects of consciousness. In philosophy it applies, for example, to Herbart's doctrine of presentations, in which cognitive experiences are made primary in the explanation of mind. In philosophy, the historical antithesis between sensation and intellect (see INTELLECT) gives the term intellectualism to theories which find the ultimate nature of reality in some form of thought or reason. T. H. Green, for example, in his *Prolegomena to Ethics*, reduces reality to intellectual relations. In aesthetics the view of intellectualism regards the ideas suggested by an object as the important factors in beauty.

INTELLIGENCE, n. *ĭn-tĕl'lĭ-jĕns* [F. *intelligence*—from L. *intellĭgen'tĭă*, perception, comprehension; *intel'lĭgens*, perceiving—from *inter*, between; *legĕrĕ*, to gather, to collect]: the power of comprehending or discovering; intellectual capacity: understanding; news; information; a spiritual being. INTEL'LIGENCER, n. *-jĕns-ẽr*, one who

sends or conveys news. INTEL'LIGENCING, a. *-lĭ-jĕns-ĭng*, in *OE.*, conveying information of private or distant transactions. INTEL'LIGENT, a. *-jĕnt* [F. *intelligent*—from L. *intellĭgen'tem*]: well informed; skilful; intellectual. INTEL'LIGENTLY, ad. *-lĭ.*—SYN. of 'intelligence': instruction; advice; notice; intellect; notification; skill; knowledge; communication; spirit; mind;—of 'intelligent': knowing; instructed; sensible; understanding.

INTELLIGIBLE, a. *ĭn-tĕl'lĭ-jĭ-bl* [F. *intelligible*—from L. *intellĭgĭb'ĭlĭs*, perceptible—from *legĕrĕ*, to gather, to choose]: clear; plain; perspicuous; that may be understood. INTEL'LIGIBLY, ad. *-blĭ.* INTEL'LIGIBLENESS, n. *-bl-nĕs*, or INTEL'LIGIBIL'ITY, n. *-bĭl'ĭ-tĭ*, state of being intelligible.

INTEMPERANCE, n. *ĭn-tĕm'pĕr-ăns* [F. *intempérance*—from L. *intempĕran'tĭă*, intemperance; *intempĕrans*, intemperate—from *in*, not; *tempĕrārĕ*, to observe proper measure]: want of proper restraint; excess in action or indulgence; habitual over-indulgence in the use of intoxicating liquors (see INTOXICATION). INTEM'PERATE, a. *-āt* [L. *intempĕrātus*, immoderate]: not moderate or restrained within due limits; addicted to excess in the use of intoxicants; violent. INTEM'PERATELY, ad. *-lĭ.* INTEM'PERATENESS, n. want of moderation; excess in indulgence.—SYN. of 'intemperate': immoderate; excessive; drunken; gluttonous; passionate; ungovernable; inordinate.

INTENABLE, a. *ĭn-tĕn'ă-bl* [L. *in*, not; *tenērĕ*, to hold]: in *OE.*, that cannot hold.

INTEND, v. *ĭn-tĕnd'* [L. *inten'dĕrĕ*, to stretch out, to exert—from *in*, into; *tendo*, I stretch or strain: F. *entendre*, to understand, to conceive: It. *intendre*, to comprehend with the mind, to intend]: to mean; to design; to purpose. INTEND'ING, imp. INTEND'ED, pp.: ADJ. designed; purposed; in *OE.*, having tension. INTEND'ANT, n. [F.—L.]: one who has charge, superintendence, or management. INTEND'ANCY, n. *-ăn-sĭ*, the office or employment of an intendant, or his district. INTEND'EDLY, ad. *-lĭ.* INTEND'MENT, n. intention; design. INTENDIMENT, n. *ĭn-tĕnd'ĭ-mĕnt*, in *OE.*, attention; accurate examination; skill in understanding of; careful thought or consideration.—SYN. of 'intend': to extend; enforce; intensify; strain; regard; attend to; contemplate; meditate.

INTEND'ANT, or INTENDANT MILITAIRE: officer in the French army charged with the organization and direction of all the civil services attending a force in the field. The officers acting under his orders are those in charge of all the finance services, the provisions, stores, hospitals, artillery train, and transport departments, besides the interpreters, guides, and others in like temporary services. The *intendant-en-chef* of an army is the representative of the minister of war; and, short of

superseding the general's orders, can exercise, in case of need, all the functions of that high officer of state. The intendance is divided into intendants ranking with general officers, sub-intendants with colonels, and assistant-intendants with majors; besides cadets, who receive no pay, and constitute a probationary grade.

Intendant was the name given in France before the Revolution to the overseer of a province. Such permanent officers were appointed first by Henry II. (1551). Under the complete system of centralization established by Richelieu, these intendants, as they were now called, became the mere organs of the royal minister, to the exclusion of all provincial action. To them belonged the proportioning of assessments, the levying of soldiers, etc. The national assembly, 1789, established in each dept. an elective administration. Napoleon virtually restored the intendants, but exchanged the hated name for that of *Prefects* (q.v.).

INTENSE, a. *ĭn-tĕns'* [F. *intense*—from L. *intensus*, or *intentus*, stretched out, extended—from *in*, on or in; *tendo*, I stretch or strain: It. *intenso* (see INTENT)]: raised to a high degree; increased to excess; strained; very close, as intense application; violent; extreme. INTENSE'LY, ad. *-lĭ*. INTENSE'NESS, n. *-nĕs*, or INTENSITY, n. *ĭn-tĕn'sĭ-tĭ*, the state of being raised to a high degree; extreme violence or degree. INTENSION, n. *ĭn-tĕn'shŭn* [F.—L.]: the act of forcing or straining; the increase of the energy of a quality—opposed to *remission*. INTEN'SIFY, v. *-sĭ-fī* [L. *făcĭō*, I make]: to render more intense. INTEN'SIFYING, imp. INTEN'SIFIED, pp. *-fīd*. INTEN'SIVE, a. *-sĭv*, stretched; assiduous; serving to give force or emphasis. INTEN'SIVELY, ad. *-lĭ*. INTEN'SIVENESS, n. *-nĕs*.—SYN. of 'intense': forced; unrelaxed; vehement; ardent; fervent; earnest; stretched; strict; keen; biting; severe.

INTENT, a. *ĭn-tĕnt'* [L. *intentus*, stretched out, extended: It. *intento*, intent or bent on a thing: F. *entente*, meaning, purpose (see INTENSE)]: having the mind strained or closely fixed on a subject; anxiously diligent: N. the thing aimed at or intended; a design or purpose; drift. INTENT'LY, ad. *-lĭ*, earnestly. INTENT'NESS, n. close application of the mind; great earnestness. INTENTION, n. *ĭn-tĕn'shŭn* [F.—L.]: aim or determination; design; purpose; earnestness. INTEN'TIONAL, a. *-shŭn-ăl*, done with design or purpose. INTEN'TIONALLY, ad. *-lĭ*. INTEN'TIONED, a. *shŭnd*, in purpose or design—only used when preceded by *well*, *ill*, etc. WELL-INTENTIONED, having good intentions. ILL-INTENTIONED, having bad intentions. TO HEAL BY THE FIRST INTENTION, in *surg.*, to heal, as a wound, without suppuration. TO ALL INTENTS AND PURPOSES, or TO ALL INTENTS, in all applications or senses, whatever may be meant or designed. —SYN. of 'intent and intention': view; meaning; end;

aim; object; scheme; project;—of 'intently': steadfastly; fixedly; eagerly; attentively; diligently; sedulously.

INTENT, a legal term signifying the end or object which a person had in the performance of an act, the making of an engagement, or the drawing up of a will. Generally the legal consequences of an act are considered quite independently of the intention of motive of such an act. A wrong done to the person or property of another is punishable at law without consideration of the intentions of the person committing the violence or trespass. But when an engagement has been made by a person, or a written disposition of property executed, the intention of the person making the engagement or signing the deed is fair matter for legal inquiry. In this connection a subsequent stipulation by word of mouth is not competent to nullify or modify the terms of a written engagement. Intent also forms an important part in suits for defamation, fraud and negligence. Negligence must have intent to make it criminal, so must defamation and fraud and malicious mischief. Consult Thayer, *Preliminary Treatise on Evidence* (1898); Black, *Construction and Interpretation of Laws* (1896); Hardcastle, *Rules which govern the Construction and Effect of Statutory Law* (1900).

INTER, *ĭn'tėr:* Latin prefix signifying 'between,' 'among,' as in *inter*marry—the French form is *entre*, as in *enter*tain.

INTER, v. *ĭn-tėr'* [mid. L. and It. *interrārĕ*, to bury—from L. *in*, into; *terra*, the earth: F. *enterrer*, to inter]: to deposit in and cover with earth; to bury. INTER'RING, imp. INTERRED, pp. *ĭn-tėrd'*. INTER'MENT, n. *-mĕnt*, the act of depositing a dead body in the earth; burial.

INTERACT, n. *ĭn'tėr-ăkt'* [L. *inter*, between; *actus*, done]: a short piece between others, as in a play. IN'TERAC'TION, n. *ăk'shŭn*, mutual action.

INTERACTION THEORY, in Philosophy. See MIND AND BODY.

INTER ALIA, *ĭn'tėr ā'lĭ-ă* [L. among others]: among other things.

INTERAMBULACRA, n. *ĭn'tėr-ăm'bū-lā'kră* [L. *inter*, between; *ambŭlāerum*, that which serves for walking—from *ambŭlō*, I walk about]: in *zool.*, the imperforate plates which lie between the perforate plates, or *ambulaera*, in the shells or crusts of the sea-urchin. IN'TERAM'BULA'CRAL, a. *-krăl*, of or pertaining to.

INTERAM'NA. See TERNI.

INTERARTICULAR, a. *ĭn'tėr-ār-tĭk'ū-lėr* [L. *inter*, between; *artic'ulus*, a little joint]: in *anat.*, a term applied to the cartilages which lie within joints; applied to certain ligaments, as that within the acetabulum.

INTERCALAR, a. *ĭn-tėr'kă-lėr*, or INTER'CALARY, a. *-lėr-ĭ* [F. *intercalaire*—from L. *intercălārĭs*, put in between; *intercălātus*, proclaimed that something has been inserted among—from *inter*, between; *călō*, I call, I proclaim—*lit.*, called or proclaimed between]: inserted in the midst of others—applied to the day (29) added to February in leap-year, and to any months or days occasionally inserted in the calendar to make it correspond with the solar year—see CALENDAR: in *bot.*, applied to the growth of the cell-wall when a new deposition takes place, in such a manner that an interposed piece of cell-wall from time to time appears. INTERCALATE, v. *ĭn-tėr'kă-lāt*, to insert a day or other portion of time; to place between. INTER'CALATING, imp. INTER'CALATED, pp. interposed; placed between. INTER'CALA'TION, n. *-lā'shŭn* [F.—L.]: the insertion of any portion of time in the calendar out of the usual course; the act of placing between; in *geol.*, something placed between, as subordinate beds of a different nature occurring between the main beds of a series. INTER'CALA'TORY, n. *-lā'tėr-ĭ*, that which is inserted or placed between.

INTERCEDE, v. *ĭn'tėr-sēd'* [F. *intercéder*—from L. *intercēdĕrĕ*, to go or come between—from *inter*, between; *cēdo*, I go: It. *intercedere*]: to interpose; to act as a friend between parties at variance; to plead in favor of one. IN'TERCE'DING, imp. IN'TERCE'DED, pp. IN'TERCE'DER, n. one who.—SYN. of 'intercede': to mediate; interfere; intermeddle; intervene.

INTERCELLULAR, a. *ĭn'tėr-sĕl'ū-lėr* [L. *inter*, between; *cel'lŭlă*, a little storehouse]: in *bot.*, lying between the cells in the cellular tissue.

INTERCEPT, v. *ĭn'tėr-sĕpt'* [F. *intercepter*—from mid. L. *interceptārĕ*, to intercept: or L. *interceptus*, taken or caught between—from *inter*, between; *capĭō*, I take—*lit.*, to catch between two points]: to take or seize on by the way; to obstruct; to interrupt communication with; to cut off. IN'TERCEP'TING, imp. IN'TERCEP'TED, pp.: ADJ. seized on the way; stopped; included or comprehended between. IN'TERCEP'TION, n. *-sĕp'shŭn* [F.—L.]: the act of seizing or stopping on the way; obstruction of a course. IN'TERCEP'TIVE, a. *-tĭv*, serving to intercept or obstruct.

INTERCESSION, n. *ĭn'tėr-sĕsh'ŭn* [F. *intercession*—from L. *intercessĭōnem*, an intervention—from *inter*, between; *cēdō*, I go: It. *intercessione*]: the act of interceding; entreaty in favor of another; mediation; interposition with the view of reconciling differences. IN'TERCES'SIONAL, a. *-ŭn-ăl*, containing intercession. IN'TERCES'SOR, n. *-sĕs'sėr*, a mediator: one who comes between parties with the view of reconciling them; one who undertakes to plead in behalf of another. IN'TERCESSO'RIAL, a. *-sō'rĭ-ăl*, pertaining to an intercessor. IN'TERCES'SORY, a. *-sėr-ĭ*, containing intercession; interceding.

INTERCESSION, Doctrine of, founded on the Scriptural representation of Christ, after having finished his redemptive work on earth and ascended into his state of glory and exaltation, as ever pleading with God on behalf of those whom he has redeemed by the shedding of his blood (Rom. viii. 34; Heb. vii. 25; 1 John, ii. 1). We are not to suppose that God needs to be interceded with, in the sense that he is reluctant to forgive men, or that Christ's intercession makes him more merciful than before. Since it is evident from the whole tenor of the New Testament, as well as from a multitude of special passages, that the sacrifice of Christ on Calvary for the reconciling of sinners unto God, was itself the offering of God's own love to the world (Jn. iii. 16, 17), we must regard the intercessory work of Christ rather as illustrating the eternal holiness of God and the changeless love of the Savior, and as intended to keep continually in view of the sacrifice of atoning grace whose tender mercy it develops. The doctrine of the intercession of Christ is held both by Protestants and by Rom. Catholics; but the latter, in addition, believe in the efficacy of the intercession of the Virgin and the saints, who, however, do not directly intercede for men with God, but with the Savior, the sinless One, who alone has the ear of the King of the universe.

INTERCHAIN, v. *ĭn'tėr-chān'* [*inter*, and *chain*]: to link together; to unite closely or firmly.

INTERCHANGE, v. *ĭn'tėr-chānj'* [*inter*, between, and *change:* F. *entrechanger*, to interchange—from *entre*, between; *changer*, to change]: to exchange; to put each in the place of the other; to give and take mutually; to succeed alternately: N. *ĭn'tėr-chānj*, mutual change, each giving and receiving; alternate succession; commerce; barter. In'terchang'ing, imp.: Adj. giving and receiving in alternate succession. In'terchanged', pp. *-chānjd'*. In'terchange'able, a. *-ă-bl*, that may be given and taken alternately; also applied to the parts of machines and structures which are made similar and in large quantities, so that a part taken from one may be used in any other of the same size and type. In'terchange'ableness, n. *-bl-nĕs*, or In'terchange'abil'ity, n. *-bĭl'ĭ-tĭ*, state of being interchangeable. In'terchange'ably, ad. *-blĭ*, in *her.*, placed or lying across each other, as three fishes, three swords, three arrows, etc., the head of each appearing between the tails, hilts, or but-ends of the others. In'terchange'ment, *-mĕnt*, in *OE.*, a mutual exchange or transference.

INTERCISION, n. *ĭn'tėr-sĭzh'ŭn* [L. *intercisĭōnem*, a cutting between or asunder—from *inter*, between; *cæsus*, cut]: in *OE.*, interruption.

INTERCLUDE, v. *ĭn'tėr-klôd'* [L. *interclūdĕrĕ*, to close or block up—from *inter*, between; *claudo*, I shut or close: It. *intercluderc*]: to shut from a place or course

by intervening something; to intercept; to interrupt. IN'TERCLU'DING, imp. IN'TERCLU'DED, pp. IN'TERCLU'SION, n. *-klō'zhŭn* [L. *interclū'sus*, closed or blocked up]: a stopping; interception.

INTERCOLLINE, a. *ĭn'tėr-kŏl'lĭn* [L. *inter*, between; *collis*, a hill]: a term designating those valley-like spaces or hollows which occur in volcanic regions between the *cols* or crateriform hillocks of accumulation.

INTERCOLONIAL, a. *ĭn'tėr-kŏ-lō'nĭ-ăl* [*inter*, between, and *colonial*]: relating to the intercourse between different colonies.

INTERCOLUMNIATION, n. *ĭn'tėr-kō-lŭm'nĭ-ā'shŭn* [L. *inter*, between; *columna*, pillar or post]: in *classic architecture*, the distance between the columns of a building, measured at the bottom of the shaft. The intercolumniation varies in different examples, but the most favorite distance for the columns to be placed apart is 2¼ diameters of the column, which by Vitruvius is called *Eustyle*. The central intercolumniation of a colonnade is frequently made wider than the others when required for access to a gate or door. In Doric architecture, the intercolumniation is decided by the spacing of the triglyphs, the columns being usually placed under the centre of every alternate triglyph.

INTERCOMMUNICABLE, a. *ĭn'tėr-kŏm-mū'nĭ-kă-bl* [*inter*, between, and *communicable*]: that may be mutually communicated. IN'TERCOMMU'NICATE, v. *-nĭ-kāt*, to hold mutual communication. IN'TERCOMMU'NICATING, imp. IN'TERCOMMU'NICATED, pp. IN'TERCOMMUNICA'TION, n. *-kā'shŭn*, reciprocal communication or intercourse.

INTERCOMMUNION, n. *ĭn'tėr-kŏm-mūn'yŭn* [*inter*, between, the communion]: mutual communion. IN'TERCOMMU'NITY, n. *-nĭ-tĭ*, mutual communication; mutual freedom or exercise, as of religion. INTERCOMMUNING, LETTERS OF, ancient writ issued by the Scotch privy council, warning persons not to harbor rebels.

INTERCONTINEN'TAL RAILWAY, or PAN-AMERICAN RAILWAY, a proposed line of standard gauge, to connect the railway systems of the United States and Mexico with those of the Argentine Republic, utilizing as far as practicable existing systems in Central and South America. At the first International Conference of American States, held in Washington (1889–90) the committee on railway communications said in their report, 'That a railroad connecting all or a majority of the nations represented in this conference will contribute greatly to the development of cordial relations between said nations and the growth of their material interests.' President Harrison in 1890, May 19, recommended that Congress should make an appropriation for the share of the United States in the expenses of a preliminary survey. Congress complied, and the Intercontinental Rail-

way Commission began its work with A. J. Cassat as chairman and H. G. Davis at the head of the finance committee. The commission spent about $360,000 for surveys, maps, etc., three corps of engineers making experimental surveys between the north of Guatemala and Argentina in 1892, 1893, and 1894. It was found that the approximate length of the line to connect the southeastern boundary of Mexico with Buenos Ayres would be: in Guatemala, 230 miles; Salvador, 220; Honduras, 70; Nicaragua, 224; Costa Rica, 363; Colombia, 1,372; Ecuador, 635; Peru, 1,671; Bolivia, 774, and Argentina, 1,143; total, 6,702. The distance from New York to the Guatemalan frontier is 3,769 miles, and thus the total from New York to Buenos Ayres is 10,471 miles. Links between the termini of the Argentine and Mexican systems: In Bolivia, 192 miles; in Peru, 151 miles; in Nicaragua, 31 miles; in Salvador, 20 miles; in Guatemala, 30 miles. This statement shows that about half of the distance between New York and Buenos Ayres was covered by railways then existing. In 1901, Nov. 27, the Pan-American Railway committee of the Second International Conference held in Mexico City stated that 'some additional railroad has been built that could be utilized as a part of the continental system;' that not more than 5,000 miles of road would have to be constructed to establish railway communication between the systems of North and South America; that $200,000,000 would be ample for this work; and that the surveys made by the engineers of the commission demonstrated the practicability of constructing all of the missing links. The concluding assertion, however, should be received with caution. In Central America the proposed line runs along the volcanic coast; on entering South America it is continued among the enormous volcanic Andes, still paralleling the Pacific shore, but further inland. Recommendations made by the committee in 1901, Nov. 27, were that a permanent committee on Pan-American Railway should be appointed 'to further the project after the adjournment of the conference;' also that the United States should take the lead in sending 'competent and reliable persons whose duty it shall be to determine accurately the resources of the different countries and the condition of railway lines in operation . . . and the prospects for business for an intercontinental line . . . and also to ascertain what concessions or assistance each of the respective governments is willing to grant to the enterprise.' The committee which prepared the report submitted at the Rio de Janeiro Conference in 1906, was authorized by the Conference in the City of Mexico, and was composed in 1906 of Henry G. Davis, of West Virginia, Chairman; Andrew Carnegie, J. D. Cassasus, Ambassador of Mexico to the United States; Charles M. Pepper, and A. Lazo-Arriaga. Most of the report of the committee was based on the in-

vestigations of Mr. Pepper, who, as special commissioner, spent a year going over the surveys in South America. While much has already been done, that which remains presents difficulties, involving principally the ability of some of the countries to construct railways at this time. According to the report there are not more than 3,700 miles of intercontinental railway not specifically provided for.

INTERCOSTAL, a. *ĭn'tĕr-kŏs'tăl* [L. *inter*, between; *costa*, a rib: F. *intercostal*, between the ribs]: lying between the ribs; applied to certain respiratory muscles.

INTERCOURSE, n. *ĭn'tĕr-kōrs* [OF. *entrecours*, intercourse, commerce—from mid. L. *intercursus*, commerce—from L. *inter*, between, and *cursus*, a running]: connection by friendly dealings between persons or nations; familiarity; fellowship; trade.—Syn.: connection; communication; communion; dealing; commerce; acquaintance; association.

INTERCROSS, v. *ĭn'tĕr-krŏs'* [*inter*, between, and *cross*]: to cross or breed with other species: see Cross.

INTERCURRENT, a. *ĭn'tĕr-kŭr'rĕnt* [*inter*, between, and *current*]: running between or among; intervening; in *med.*, applied to diseases which occur in a scattered manner during the prevalence of epidemic disorders. In'tercur'rence, n. *-rĕns*, intervention; occurrence.

INTERDEPENDENCE, n. *ĭn'tĕr-dē-pĕn'dĕns*, or In'terdepen'dency, n. *-dĕn-sĭ* [*inter*, between, and *dependence*]: mutual dependence.

INTERDICT, n. *ĭn'tĕr-dĭkt* [L. *interdic'tum*, a prohibitory order, in mid. L. a kind of excommunication—from *inter*, between; *dictus*, said or told: F. *interdit*]: a prohibiting order or decree; a prohibition issued by the pope restraining the clergy from performing divine service or administering the sacraments in a kingdom or town; in Scotch law, order issued by the court of session to stay or prohibit a person from an act presumed to be illegal or wrongful; similar to injunction (q.v.): V. *ĭn'tĕr-dĭkt*, to forbid; to prohibit; to debar; to cut off from the spiritual services of the church. In'terdic'ting, imp. In'terdic'ted, pp. In'terdic'tion, n. *-dĭk'shŭn* [F.]: a prohibition; a prohibitive decree; in Scotch law, a process for protection from imposition of persons of imbecile minds (see Imbecility). In'terdic'tive, a. *-tĭv*, serving to prohibit. In'terdic'tory, a. *-tĕr-ĭ*.

IN'TERDICT: ecclesiastical censure or penalty in the Rom. Cath. Church, consisting in the withdrawal of the administration of certain sacraments, of the celebration of public worship, and of the solemn burial service. Interdicts are of three kinds—*local*, which affect a particular place, and thus comprehend all, without distinction, who reside therein; *personal*, which affect only a person or persons, and which reach the person or

persons wherever found; and *mixed*, which affect both a place and its inhabitants, so that the latter would be bound by the interdict even outside of its purely local limits. The principle on which this ecclesiastical penalty is founded may be traced in the early discipline of public penance, by which penitents were for a time debarred from the sacraments, and from the privilege of presence at the celebration of the Eucharist: but it was not only in the mediæval period that, owing to certain circumstances (see EXCOMMUNICATION), it came into use as an ordinary church censure in the then frequent conflicts of the ecclesiastical and civil power. It was designed to awaken the national conscience to the nature of the crime, by including all alike in the penalty with which it was visited. The most remarkable interdicts are those laid upon Scotland 1180 by Alexander III.; on Poland by Gregory VII. on occasion of the murder of Stanislaus at the altar; by Innocent III. on France under Philippe Auguste, 1200; and on England under John, 1209. The description of England under the last-named interdict, as detailed by some of the contemporary chroniclers, presents a strange and striking picture of the condition of the public mind, difficult for our modern ideas to appreciate. It would be a great mistake, however, to suppose that, during the continuance of an interdict the people were *entirely* destitute of spiritual assistance. The interdict regarded mainly the *solemnities* of public worship; it was permitted to administer baptism, confirmation, and the Eucharist in all cases of urgency; to confess and absolve all who were not personally the guilty participators in the crime which the interdict was meant to punish; to celebrate marriage, but without the solemnities; and to confer orders in cases of necessity. And under the popes Gregory IX., Innocent III. and IV., and Boniface III., still further mitigations of its rigor were introduced, one of which was the removal of the interdict and restoration of public worship on certain great festivals, especially Christmas, Easter, Pentecost, Assumption, and All Souls. The council of Basel enacted very stringent rules as to the use of this penalty, and in later times the general interdict has been entirely disused, though occasionally, in special circumstances, and to mark the horror of the church for some enormous crime, instances are still recorded in which a particular place or church has been visited with the local interdict.

INTERDIGITAL, a. *ĭn'tĕr-dĭj'ĭ-tăl* [*inter*, between, and *digital*]: in *anat.*, situated between the fingers; pertaining to the spaces between the fingers. IN'TERDIG'ITATE, v. *-ĭ-tāt*, to interlock like the fingers when the hands are clasped. IN'TERDIG'ITATING, imp. IN'TERDIG'ITATED, pp.

INTERESS, v. *ĭn'tĕr-ĕs'* [see under INTEREST 2]: in

*OE.*, to concern; to give a share in; to connect with; to ally. IN'TERESS'ING, imp. INTERESSED, pp. *ĭn'tĕr-ĕst*, allied; connected with. INTERESSE TERMINI, term in English law denoting the kind of interest which a lessee takes in land when the lease is executed.

INTEREST, n. *ĭn'tĕr-ĕst* [OF. *interest*, a right or title to, a payment for the use of money; F. *intérêt*, interest —from L. *interest*, it is profitable, it concerns—from *inter*, between; *esse*, to be: mid. L. *interessĕ*, usury]: regard to private profit or advantage; concern; share; price paid for the use or loan of money—the sum lent being called the *principal*, the interest for a year on a hundred the *rate*, and the principal and interest the *amount:* V. to give or have a share in. SIMPLE INTEREST, the interest reckoned and allowed upon the principal or money lent, paid year by year while the loan exists. COMPOUND INTEREST, the interest both of the sum lent and of the interest accumulating upon it year by year—thus, the amount for any one year becomes the principal for the next. *Note.*—INTEREST appears to have been originally the penalty or indemnity exacted by law for damage done, whence by a change in the sense and its application, it became restricted to the accommodation-price for a loan of money.

INTEREST, v. *ĭn'tĕr-ĕst* [formed from *interessed*, the pp. of the OE., verb *interesse*, or *interess*, to interest; OF. *interessé*, interessed or touched in: confusedly connected with L. *interessĕ*, to concern: Sp. *interesar;* It. *interessare*, to interest]: to excite emotion or concern in behalf of another; to concern; to affect; to engage, as the attention or affections; N. emotion or concern for another; influence over others: benefit; good. IN'TERESTING, imp.: ADJ. exciting the attention or curiosity. IN'TERESTED, pp.: ADJ. having the attention or curiosity excited in behalf of; concerned in any cause, event, or undertaking. IN'TERESTINGLY, ad. IN'TERESTEDNESS, n. IN'TERESTINGNESS, n. the condition or quality of being interesting. *Note.*—INTEREST from *interessed* has been partially confused in its significations with INTEREST 1; and wholly influenced by it in the form which its spelling has assumed. *Interest=interessed* by the well-known change of *ed* into *t*, and dropping an *s*—in which case *interest-ed* is really a reduplicated pp.

IN'TEREST: payment due by the borrower of a sum of money to the lender for its use. The interest of $1.00 for one year is called the *rate per cent.;* the money lent, the principal; and the sum of any principal and its interest, the amount. The current or market rate of interest fluctuates widely, by reason, not, as is often supposed, of the extent of the supply of money, but of the variable rates of profit, as in Holland, where it has always been comparatively low, and in our own time in California, and Australia, where mercantile profits being in excess, the rate of interest is relatively high.

## INTEREST.

A strong prejudice against exacting interest existed in early times, arising from a mistaken view of some enactments of the Mosaic law; and as late as the reign of Edward VI., there was a prohibitory act passed for the alleged reason that 'the charging of interest was a vice most odious and detestable, and contrary to the word of God.' See Ex. xxii. 25; Lev. xxv. 39; Deut. xxiv. 19; the application being to money lent for the relief of distress, and not advanced to the borrower that he might make profit on it. Calvin, the famous reformer, was one of the first to expose the error and impolicy of this view, though a series of enactments, known as the Usury Laws, to some extent perpetuated it, by an attempted restriction of the maximum rate to be paid. In England, this rate was fixed by act 21 James I. at 8 per cent. During the Commonwealth, it was reduced to 6 per cent.; and by the act 12 Anne, c. 16, to 5 per cent. at which rate it stood till 1839, when the law was repealed. In Scotland, any charge for interest was prohibited before the Reformation. In 1587, the rate was fixed by law at 10 per cent.; in 1633, at 8 per cent.; in 1661, at 6 per cent.; and by the act of Anne, as above noted, at 5 per cent. It is now admitted that the operation of such laws tended only to raise the real rate of interest by driving men in distress to adopt extravagant methods of raising money—the bonuses thus paid being really and in effect an addition to the nominal interest.

Interest is computed on either of two principles: (1) simple interest, where, should the interest not be paid as due, no interest is charged on the arrears. Although this mode of reckoning has little to recommend it in reason, it is adopted in many transactions, and receives the sanction of the law. The computation of simple interest is easy, it being necessary only to calculate the product of the principal, the rate per cent., and the period in years and fractions of a year, the result, divided by 100, giving the sum required. Thus, wanted the interest of \$1781.67 for 3½ years at 4 per cent.

$$1781.67 \times 3\tfrac{1}{2} \times 4 \div 100 = \$249.43.$$

(2). Compound interest is the charge made where—the interest not being paid when due—it is added to the principal, forming the amount upon which the subsequent year's interest is computed. The rules for most readily making computations by compound interest can be effectively expressed only algebraically, and we annex a few of the elementary formulæ.

1. Since \$1.00, increased by its interest $r$, at the end of one year becomes $\$1.00 + r$, this amount at the end of the second year becomes $(1 + r)^2$, and generally at the end of the $n^{th}$ year $(1+r)^n$. Example: To find the amount of \$1.00 improved at 5 per cent. for six years. $r$. the interest for \$1.00 is ·05, and $n=6$; therefore $(1{\cdot}05)^6 = \$1.34$. 2. Since \$1.00 becomes in one year $1 + r$, it is found by ordinary proportion that the fraction of \$1.00,

which will amount to \$1.00 in a year is $(1+r)^{-1}$ $\left(\text{i.e., } \frac{1}{1+r}\right)=v$; and reasoning as above, the sum which will amount to \$1.00 $n$ years hence is $(1+r)^{-n}=v^n$. 3. The amount of \$1.00 in $n$ years being $(1+r)^n$, it will be seen that the excess of this sum over the original \$1.00 invested, or $(1+r)^n-1$, is the amount of an annual increment or 'annuity' of \$$r$ for the period, and from this, by proportion, is deduced the formula for the amount of an annuity of \$1.00 for the same time, being

$$\frac{1}{r}(1+r)^n-1.$$

4. Reasoning as in (3), the present value of an annuity certain of \$1.00 for $n$ years, or the sum which, improved at interest, will meet the annuity is

$$\frac{1}{r}\left[1 \quad \frac{1}{(1+r)}\right]=\frac{1-v^n}{r}$$

Tables for the four classes of values above described, based on various rates of interest, are given in most works on annuities. Those by Mr. Rance are computed for each quarter per cent. from ¼ to 10 per cent. It may be useful to note two results that can be easily deduced from a table of the present values of annuities (4). 1. The annuity which \$1.00 will purchase for any number of years is the reciprocal of the corresponding value in such a table. Example: A person borrows \$100, to be repaid by annuity in 15 years, with interest, at 5 per cent.; required the annuity? The present value of an annuity of \$1.00 per annum for that period, at the rate stated, is \$10.38, and $100 \times 10.38^{-1}$=\$9.6339. 2. To find the annuity which in a given period will amount to \$1.00—subtract from the annuity that \$1.00 will purchase, ascertained as above, $r$, the interest of \$1.00 for a year. Example: The annuity which, paid for 15 years, will amount to \$1.00, taking interest at 5 per cent. is

| | |
|---|---|
| Value of annuity which \$1.00 will purchase as last found . . . . | \$.096339 |
| Subtract $r$, at 5 per cent., . . . | .050000 |
| Annuity required, . . | \$.046339 |

\$4.6339 will amount in 15 years to \$100.00.

Interest in Law.—In England and Ireland when a debt has been for some time due, there is no obligation imposed on the debtor by the common law to pay any interest whatever, though the sum has been fixed and often demanded. The creditor can always sue for his debt, which is his proper remedy, but he derives no benefit from giving time to his debtor. Therefore, if interest is to be paid, this must be, as a general rule, by virtue of express agreement. Nevertheless, this rule

# INTEREST.

## INTEREST LAWS IN THE UNITED STATES 1908.

| States and Terr. | Interest Laws. | | Grace. | Statutes of Limitations. | | | Usury Penalties. |
|---|---|---|---|---|---|---|---|
| | Legal | Contract. | | Jdgts Yrs. | Nts. Yrs. | Op'n acc. Yrs. | |
| | pr. ct. | pr. ct. | | | | | |
| Ala..... | 8 | 8 | Grace. | 20 | 6 | 3 | Forfeit. of entire int. |
| Alas... | 8 | 12 | Grace. | 10 | 6 | 6 | Forfeit. of entire int. |
| Ariz... | 6 | any | Nonc. | 5 | 4 | 3 | None. |
| Ark ... | 6 | 10 | Grace. | 10 | 5 | 3 | Forfeit. of prin. and int. |
| Cal.... | 7 | any | None. | 5 | 4 | 2 | None. |
| Colo... | 8 | any | Grace. | 20 | 6 | 6 | None. |
| Conn .. | 6 | *6 | " | None. | 6 | 6 | Forfeit. of excess. |
| Del.... | 6 | 6 | " | 10 | 6 | 3 | Forfeit. of principal. |
| D. C... | 6 | 10 | " | 12 | 3 | 3 | Forfeit. of entire int. |
| Fla.... | 8 | 10 | " | 20 | 5 | 2 | Forfeit. of entire int. |
| Ga .... | 7 | 8 | " | 7 | 6 | 4 | Forfeit. of excess. |
| Ida.... | 7 | 12 | " | 6 | 5 | 4 | Forfeit. entire int. |
| Ill..... | 5 | 7 | " | 20 | 10 | 5 | Forfeit. of entire int. |
| Ind ... | 6 | 8 | " | 20 | 10 | 6 | Forfeit. of excess. |
| Io..... | 6 | 8 | " | 20 | 10 | 5 | Forfeit. entire int. |
| Kan... | 6 | 10 | " | 5 | 5 | 3 | Forfeit. of excess. |
| Ky.... | 6 | 6 | " | 15 | 15 | 5 | Forfeit. of excess. |
| La .... | 5 | 8 | " | 10 | 5 | 3 | Forfeit. of entire int. |
| Mc.... | 6 | any | " | 20 | 6 | 6 | None. |
| Md.... | 6 | 6 | " | 12 | 3 | 3 | Forfeit. of excess. |
| Mass .. | 6 | any | " | 20 | 6 | 6 | None. |
| Mich .. | 5 | 7 | " | 10 | 6 | 6 | Forfeit. of entire int. |
| Minn .. | 7 | 10 | " | 10 | 6 | 6 | Forfeit. of entire int. |
| Miss... | 6 | 10 | " | 7 | 6 | 3 | Forfeit. of entire int. |
| Mo.... | 6 | 8 | " | 10 | 10 | 5 | Forfeit of excess. |
| Mont.. | 8 | any | None. | 10 | 8 | 5 | Nonc. |
| Neb... | 7 | 10 | Grace. | 5 | 5 | 4 | Forfeit. of entire int. |
| Nev... | 7 | any | " | 6 | 4 | 4 | Nonc. |
| N. H .. | 6 | 6 | " | 20 | 6 | 6 | Forfeit. 3 times excess. |
| N. J... | 6 | 6 | " | 20 | 6 | 6 | Forfeit. of entire int. |
| N. M.. | 6 | 12 | Nonc. | 7 | 6 | 4 | Forfeit. of excess. |
| N. Y... | 6 | †6 | " | 20 | 6 | 6 | Forfeit. of prin. and int. |
| N. C... | 6 | 6 | Grace. | 10 | 3 | 3 | Forfeit. of entire int. (double if paid). |
| N. D... | 7 | 12 | " | 10 | 6 | 6 | Forfeit. of entire int. (double if paid). |
| O..... | 6 | 8 | " | 15 | 15 | 6 | Forfeit. of excess. |
| Okla .. | 7 | 12 | " | 5 | 5 | 3 | Forfeit. of entire int. |
| Or .... | 6 | 10 | " | 10 | 6 | 6 | Forfeit. of prin. |
| Penn .. | 6 | 6 | " | 5 | 6 | 6 | Forfeit. of excess. |
| R. I... | 6 | any | " | 20 | 6 | 6 | Nonc. |
| S. C... | 7 | 8 | " | 20 | 6 | 6 | Forfeit. of entire int. |
| S. D... | 7 | 12 | " | 20 | 6 | 6 | Forfeit. of entire int. |
| Tenn .. | 6 | any | " | 10 | 6 | 6 | Forfeit. of excess. |
| Tex ... | 6 | 10 | " | 10 | 4 | 2 | Forfeit. of entire int. |
| Utah .. | 8 | any | None. | 8 | 6 | 4 | None. |
| Vt..... | 6 | 6 | Grace. | 8 | 6 | 6 | Forfeit. of excess. |
| Va .... | 6 | 6 | " | 20 | 5 | 2 | Forfeit. of entire int. |
| Wash.. | 8 | any | ——— | 6 | 6 | 3 | Forfeit. of entire int. (double if paid). |
| W. Va. | 6 | 6 | Grace. | 10 | 10 | 5 | Forfeit. of excess. |
| Wis ... | 6 | 10 | " | 20 | 6 | 6 | Forfeit. of entire int. |
| Wyo .. | 8 | 12 | " | 21 | 5 | 8 | None. |

*No usury, but over 6 per cent. cannot be collected by law.

†A recent law legalizes any rate on call loans of $5,000 or upward on collateral security.

has always had three or four exceptions, e.g., at the discretion of a jury in an action to recover the amount of a bill of exchange or promissory note; also in the case of money due on award by an arbitrator, interest being due from the day when the award was made; also in the case of a bond for money interest being added from the day on which it ought to have been paid; also if a surety had to pay money for his principal, he could recover it with interest. In all other cases, if there was no express agreement about interest and no usage to require interest in a course of dealing between the parties or affecting a particular trade, none could be claimed. A recent statute has somewhat amended the above defect of the common law, but without essential change. As regards compound interest, it is *a fortiori* not claimable interest in any case, except where it has been expressly stipulated for, or where there is in some particular trade a definite custom to pay interest, which custom must be proved. Pawnbrokers are allowed to charge interest not exceeding a fixed sum: see PAWNBROKING. In Scotland, the law has always been much more liberal in allowing interest to be claimed on outstanding debts.

INTEREST, in Philosophy: is the consciousness of a value in some object, for the self. It is not necessary to know *what* value the object has, only to know *that* it has value. The object may produce fear, or disgust, or any other emotion, but it is interesting so long as it occupies attention. On the whole our interest in an object is pleasurable when the object is perceived to be of immediate and direct benefit; disagreeable or neutral when the benefit to be derived is remote, and disagreeable when the object is harmful. In the older psychology and in common parlance only those things intrinsically pleasure-producing were said to be interesting. Those things requiring effortful attention were thought of as uninteresting. Hence the 'doctrine of effort' vs. the 'doctrine of interest' in educational literature.

The exact nature of interest in consciousness is undefinable, perhaps unanalyzable. It has sometimes been regarded as an 'intellectual feeling,' again as a mere mental attitude. Everything to which we attend possesses some interest for us. Therefore the conditions that determine what we shall attend to and how we shall attend determine also the type of interest that will be given: e.g., we attend with conscious effort (voluntarily) to a difficult task; our interest in it is derived. We attend spontaneously to a turkey dinner, our interest is immediate. (See ATTENTION.)

There are as many kinds of interests as there are kinds of experience, for example, moral interests, aesthetic interests, practical interests, etc. They are not mutually exclusive,—a problem will now be moral, again intel-

lectual; so an object will now arouse practical interest, at another time the interest will be predominately emotional, or social. Since the very nature of the psychophysical organism decrees that it shall give attention to a few out of the myriads of objects surrounding it, interests are specialized, and become more definitely so as life advances. What objects will be interesting is determined by inherited individual and racial tendencies, by past experience, and by other factors functioning in the present. It is found that moving objects have more power to attract attention (i.e., are more interesting) than stationary objects; vivid than dim objects; living than inanimate objects. To one who has been educated in mechanical sciences machinery will be more interesting than landscapes, etc. The principles which have governed the evolution of species seem also to have set bounds to interests, and to have specified the interesting objects to a very large extent.

INTERFACIAL, a. *ĭn'tėr-fā'shal* [L. *inter*, between; *făcĭēs*, the face]: included between two faces or planes. INTERFACE, n. *ĭn'tĕr-fās*, the surface between two faces or planes in contact.

INTERFASCICULAR, a. *ĭn'tėr-fă-sĭk'ū-lėr* [L. *inter*, between; *faseic'ŭlus*, a small bundle]: applied to the cambium in decotyledonous plants occurring between the fibrovascular bundles.

INTERFERE, v. *ĭn'tėr-fēr'* [OF. *entreferir*, to strike or hit one another—from *entre*, between; *ferir*, to strike—from L. *inter*, between; *ferīrĕ*, to strike]: to interpose; to intermeddle; to take part in the business or concerns of others; to be in opposition; to hack or strike one leg against another as a horse. IN'TERFER'ING, imp. meddling; clashing. IN'TERFERED', pp. *-fērd'*. IN'TERFER'ENCE, n. *-fē'rĕns*, the intermeddling in the affairs of others; interposition; in *opties*, see below.—SYN. of 'interfere': to interpose; intermeddle; intercede; clash; contradict; oppose.

INTERFER'ENCE, in Optics: the effect which rays of light, after being bent or diffracted, produce on each other. If the rays meet after diffraction, their light, when allowed to fall on a surface, will be divided into bars or stripes, alternately light and dark (see DIFFRACTION). This phenomenon has been made the touchstone of the two rival theories of light, the *undulatory* and the *emission*. According to the former, it is thus explained: if two luminous waves simultaneously impel a molecule of ether, its motion will be the resultant of the original impulses; and if the two motions (as in the case of diffraction) be nearly in the same direction, the resultant will be nearly their sum; if opposite, their difference. Thus, when a particle has begun to undulate from the action of a luminous wave, and if, while in motion, another wave impinge upon it, the result will

be increase of light, if the motion of the second wave conspire with that of the first; but a decrease, if they oppose each other; and total darkness, if, while opposing, they are equal in velocity. Let *d* be the distance corresponding to a complete period of vibration; then, if the second wave impinge upon the molecule after it has accomplished one or more whole vibrations corresponding to the distances *d*, 2*d*, 3*d*, etc., and has returned to its original position, the two waves will evidently conspire together, and produce more violent motion: but if it impinge on the molecule, when the latter has accomplished only half a vibration, corresponding to distances $\frac{1}{2}d$, $\frac{3}{2}d$, $\frac{5}{2}d$, etc., then the wave will oppose the particle's return to its original position; thus producing diminution of motion; or, if equal, rest. In the former case, the intensity of light is increased; in the latter, diminished; and if the undulations are of equal velocity, the light is doubled in the first case, and destroyed in the second. The emission theory totally fails to explain interference. In light of different colors, the value of *d* differs for each color, being least for violet, and greatest for red light. The principle of interference accounts in the most satisfactory way for the colors of thin plates, the fringes that accompany shadows, etc.; and its explanation forms the most decisive reason yet known for adopting the *undulatory* in preference to the *emission* theory of light. See LIGHT; UNDULATORY THEORY OF LIGHT.

INTERFLUENT, a. *ĭn-tėr'flô-ĕnt* [L. *interflŭens*, or *interflŭen'tem*, flowing between—from *inter*, between; *flŭō*, I flow]: flowing between.

INTERFOLIATE, v. *ĭn'tėr-fō'lĭ-āt* [L. *inter*, between; *fŏlĭum*, a leaf]: to interleave; to interweave. IN'TERFO'LIATING, imp. IN'TERFO'LIATED, pp.: ADJ. interleaved; interwoven. IN'TERFO'LIAR, a. *-lĭ-ėr*, situated between two opposite leaves.

INTERFRETTED, a.: in *her.*, interlaced.

INTERFUSE, v. *ĭn'tėr-fūz'* [L. *interfūsŭs*, poured or spread between—from *inter*, between; *fūsŭs*, poured]: to pour or spread between. IN'TERFU'SING, imp. IN'TERFUSED', pp. *-fūzd'*: ADJ. poured or spread between. INTERFU'SION, n. *-zhŭn*, the act of interfusing.

INTERGANGLIONIC, a. *ĭn'tėr-găng'glĭ-ŏn'ĭk* [*inter*, between, and *ganglionic*]: lying or extending between ganglions.

INTERGLACIAL, a. *ĭn-tėr-glā'shal*, a.: in *geol.*, occurring between two periods of glacial action.

INTERHEMAL, a. *ĭn'tėr-hē'măl* [L. *inter*, between, and *hæmal*]: in *anat.*, between the hemal processes or spines.

INTERIM, n. *ĭn'tėr-ĭm* [L. *interim*, in the mean time—from *inter*, between; *im*, old accus. of *is*, this, that]:

time between or intervening; an interval: AD. in the mean while. *Interim*, in the history of the Reformation, was the name of several compromises forced on the German Protestants by edicts of Charles V., especially that of 1548, regulating religious and ecclesiastical matters 'in the mean time,' till they could be decided by a general council. The first is the *Ratisbon Interim*, result of the deliberations of a commission appointed during the diet of Ratisbon (Regensburg) 1541, of which Eck, Pflug, and Gropper were the Rom. Cath., and Melanchthon, Bucer, and Pistorius the Prot. members. On the greater number of doctrinal points, the commission found it possible to agree on terms which might be deemed consistent with the views of both parties; but as to the sacraments and the power of the church, the differences were irreconcilable. By the Protestants in general, the whole movement was looked on as a scheme to entrap them into a formal return to the Roman Church. At the next diet, Augsburg 1548, a new interim was by the emperor's command prepared by Pflug, Helding (Sidonius), and Agricola—called the *Augsburg Interim*. In it the use of the cup by the laity, the marriage of priests, and some other minor things, were conceded to the Protestants; but it met with very general opposition, particularly in n. Germany, and was revoked 1552. By the exertions of the Elector Maurice of Saxony, a third interim, the *Leipsic Interim*, was adopted at the diet of Leipsic, 1548, Dec. 22, which guarded the Prot. creed, but admitted great part of the Rom. Cath. ceremonial, and recognized the power of popes and bishops, when that power was not abused. But the offense given to the more zealous Protestants by this interim, which Melanchthon, Bugenhagen, and Major supported, led to division in the Prot. Church.

INTERIOR, a. *ĭn-tē′rĭ-ẽr* [L. *intĕrĭor*, further in; F. *intérieur*]: internal: inner; remote from the coast or frontier: N. the inside; that which is within; the inland part of a country. INTE′RIORLY, ad. *-lĭ*. INTERIOR SLOPE, in *fort.*, the inner slope joining the crest to the banquette. INTERIOR-ANGLES, in *geom.*, the angles formed within any figure by two adjacent sides. INTERIOR-PLANETS, in *astron.*, same as INFERIOR-PLANETS.—SYN. of 'interior a.': inner; inside; internal; inland.

INTERIOR CONDUIT: a tube or raceway placed in the interior walls, floors, or ceilings of a building, to guide, hold, and protect the wires or conductors supplying the building.

INTERIOR, DEPARTMENT OF THE, one of the executive departments of the United States government whose heads are cabinet secretaries. The 'home department,' long existent in all European governments, was only constituted in this country by act of 1849, March 3. Its functions had previously been exercised by bureaus

or officials of nearly all the other departments: patents, copyrights, public documents, and the census belonged to the State Department; public lands, mines, and judicial accounts, to the Treasury; Indian affairs, to the War Department; and pensions to the War and Navy, each for its own pensioners. By later laws the Interior was given charge of education, public surveys (including the geological survey; but the coast and geodetic survey belongs to the Treasury), subsidized railroads, Territories, national parks and reservations, returns of public contracts made by several other departments, some charitable institutions in the District of Columbia, and a number of other matters. The secretary makes an annual report of the number of public documents received and distributed. He has a salary of $10,000, and two assistant secretaries. His office has seven divisions: appointments, disbursements, lands and railroads, Indian affairs, pensions and miscellaneous, public documents, and stationery and printing. Although most of these are managed by commissions appointed by the President, their work is under the secretary's direction, and their reports are made through him. Most of the clerks and subordinate officers in the bureaus are appointed by him. All patents issued by the United States must be signed by him. The first secretary was Thomas Ewing of Ohio.

INTERJACENT, a. *ĭn'tẽr-jā'sĕnt* [L. *interjăcens*, or *interjăcen'tem*, lying between—from *inter*, between; *jăcens*, lying]: lying between: intervening. IN'TERJA'CENCY, n. *-sĕn-sĭ*, the act or state of lying between.

INTERJECT, v. *ĭn'tẽr-jĕkt'* [L. *interjec'tus*, cast or thrown between—from *inter*, between: *jăcĭō*, I cast or throw]: to throw in or between; to come between. IN'TERJEC'TING, imp. IN'TERJEC'TED, pp. IN'TERJEC'TION, n. *-jĕk'shŭn* [F.—L.]: a word thrown in to express some sudden emotion or passion; an exclamation; e.g., ah! alas! hurrah! pooh! They are hardly considered parts of speech, and never form grammatical parts of a sentence; and seem more akin to the sounds uttered by the lower animals than to articulate language. IN'TERJEC'TIONAL, a. *-shŭn-ăl*, thrown in between or among other words or phrases.

INTERJOIN, v. *ĭn'tẽr-joyn'* [*inter*, between, and *join*]: in *OE.*, to join mutually; to intermarry.

INTERJOIST, n. in *arch.* space or interval between two joists.

INTERLACE, v. *ĭn'tẽr'lās'* [F. *entrelacer;* OF. *enterlasser*, to interlace—from *entre*, between; *lasser*, or *lacer*, to lace]: to lace together; to insert one thing so as to plait or twine with another: to intermix. IN'TERLAC'ING, imp. IN'TERLACED', pp. *lāst'*. IN'TERLACE'MENT, n. insertion within.

INTERLA'KEN, or INTERLACHEN, *ĭn-tėr-lâch'ėn* ['between the lakes']: village of Switzerland, delightfully situated on the right bank of the Aare, in a plain between Lakes Thun and Brienz, 26 m. s.e. of the town of Berne. Along the *Walnut Avenue* or *Highway* (Hoheweg) between the lakes, there is an almost uninterrupted line of hotels or *pensions*, and of shops. Interlaken occupies the site of religious houses founded 1130, abolished 1528. Within a few miles of the village are many of the most wonderful sights that the country affords. Ten miles s. is the Staubbach (meaning the 'dust-beck or fall'), with its perpetual iris; a few miles farther s., and in full view from the village, are the magnificent Jungfrau and several other remarkable peaks of the Bernese Alps. The visitors, 150,000 to 200,000 annually, are the chief source of income to the place. Pop. of Interlaken, Aarmühle, and the adjacent Unterseen about 4,080.

INTERLARD, v. *ĭn'tėr-lârd'* [F. *entrelarder*, to interlard—from L. *inter*, between; *lardum*, the fat of bacon]: *literally*, to insert pieces of fat among lean; to diversify by mixture; to insert, usually in a depreciatory sense. IN'TERLARD'ING, imp. IN'TERLARD'ED, pp.

INTERLEAVE, v. *ĭn'tėr-lēv'* [*inter*, between, and *leave*]: to insert blank leaves in a book between other leaves. IN'TERLEAV'ING, imp. IN'TERLEAVED', pp. *-lēvd':* ADJ. having blank leaves inserted between.

INTERLINE, v. *ĭn'tėr-līn'* [F. *entreligner*—from mid. L. *interlĭnĕārĕ*—from L. *inter*, between, and *lĭnĕă*, a line]: to write between lines; to write in alternate lines. IN'TERLI'NING, imp.: N. the corrections or alterations written between the lines, as of a manuscript. IN'TERLINED, pp. *-līnd:* ADJ. having lines written between lines. IN'TERLIN'EAR, a. *-lĭn'ĕ-ėr*, or IN'TERLIN'EARY, a. *-ėr-ĭ*, inserted between the lines formerly written or printed. IN'TERLINEA'TION, n. *-ā'shŭn*, the act of inserting words or lines between lines; correction by writing between the lines; a passage or words written between lines: in a *deed*, insertion or correction either between the lines or on the margin. Interlineations in a deed are not fatal to its legality, provided only it is proved that they were made before executing the deed. It is usual to put the parties' initials opposite the place where the interlineations occur, in proof of this, or at least by way of memorandum. In affidavits and other formal documents also the initials should be put at the places interlined.

INTERLINK, v. *ĭn'tėr-lĭngk'* [*inter*, between, and link]: to connect by uniting links as in a chain.

INTERLOBULAR, a. *ĭn'ter-lŏb'ū-lėr* [L. *inter*, between; *lobŭlus*, a little lobe]: situated between the lobules of organs.

INTERLOCUTION, n. *ĭn'tĕr-lō-kū'shŭn* [F. *interlocution*—from L. *interlŏcūtĭōnem*, a speaking between—from *inter*, between; *locūtŭs*, spoken]: a speaking between or among different persons; a dialogue. INTERLOCUTOR, n. *ĭn'tĕr-lŏk'ū-tĕr* [F. *interlocuteur*—from mid. L. *interloe'ŭtor*]: one who speaks in dialogue; a speaker in a drama; in *Scotch courts of law*, the judgment or order of the court, or of a judge, which may not be final. IN'TERLOC'UTORY, a. *-tĕr-ĭ*, consisting of dialogue; preparatory: in *law*, not final or definite, but merely a step in a suit or action.

INTERLOPE, v. *ĭn'tĕr-lōp'* [L. *inter*, between; Dut. *loopen*, to run: Dut. *enterloper*, a contraband trader: F. *interlope*, smuggling]: to run between; to thrust one's self into any business or matter in which one has no just right; to intrude. IN'TERLO'PING, imp. IN'TERLOPED, pp. *-lōpt*. IN'TERLO'PER, n. *literally*, a leaper or runner between; one who runs into a business or matter in which he has no just right; an intruder. *Note.*—INTERLOPE as a French word is said to have come originally from Dut. through Eng.; and INTERLOPER was formerly applied to those trading ships which infringed the exclusive rights of the East India Company's ships.

INTERLUDE, n. *ĭn'tĕr-lôd* [L. *interlūdĕrĕ*, to play among—from *inter*, between; *lūdĕrĕ*, to play; *lūdus*, a play]: a light entertainment given between the parts of another, usually between the play and the afterpiece; a particular form of early English dramas occupying a place intermediate between the miracle plays and moral plays: in *Church Service*, short melodious phrase played by the organist (usually extempore) between the stanzas of a psalm-tune. In the German Prot. Church, the interlude (or *zwischenspiel*) is commonly played after each line of the stanza, to give the congregation a pause for breath. IN'TERLU'DED, a. inserted in the manner of an interlude.

INTERLUNAR, a. *ĭn'tĕr-lô'nĕr*, or IN'TERLU'NARY, a. *-nĕr-ĭ* [L. *interlūnĭŭm*, the change of the moon—from *inter; lūnă*, the moon]: belonging to the time between the old and new moon when it is invisible.

INTERMARRY, v. *ĭn'tĕr-măr'rĭ* [*inter*, between, and *marry*]: to marry persons of a family, tribe, or nation with some of another. IN'TERMAR'RYING, imp. IN'TERMAR'RIED, pp. *-rĭd*. INTERMARRIAGE, n. *ĭn'tĕr-măr'ĭj*, reciprocal marriage between families, tribes, or nations. Intermarriage of near relatives has been generally believed to entail degeneration upon the offspring, and has been condemned and prohibited. The physical deformity and mental debasement of the Cagots of the Pyrenees, of the Marrons of Auvergne, of the Sarrasins of Dauphiné, of the Cretins of the Alps, have been attributed to the consanguineous alliances which seemed unavoidable among these peoples. More recently, the same opin-

ion has been supported by the history of deaf-mutism and of idiocy. Of 235 deaf and dumb children whose parentage could be traced, 70, or nearly 30 per cent., were the offspring of the intermarriage of blood relations. But in opposition to, and apparently destructive of such an hypothesis, may be adduced the unimpaired condition and symmetry of the Jews, of the small Mohammedan communities in India, of the isolated tribes in N. America, among whom the intermarriage of near relatives is compulsory. Moreover this opinion does not hold in the analogous cases among the inferior animals, as the Arabs can trace the pedigree of their most valuable horses to the time of Mohammed, while they avoid all crossing; the stud-books in Britain record the ascendants of racers for 200 years, and show the perpetuation of the qualities of strength, and weight, and fleetness by propagation within the endowed family —both Eclipse and Childers being descended from a horse the offspring of a parent and foal; and the descendants, again, of these horses, which still maintain the highest estimation, afford many instances of very close breeding; and lastly, the Durham ox and the Ditchely sheep were the result and triumph of breeding 'in and in.' The present state of the controversy, as it has been recently conducted in France, may be summed up in the proposition, that consanguineous alliances are not necessarily hurtful to the offspring, provided the parents be healthy and robust; but the observations of Devay and Bemiss in America show that such generalizations should be received with some doubt. Even were it established that mental disease generally followed such union, the transmission might depend rather upon the increased certainty of reproducing hereditary tendencies, than upon the violation of any physiological law.—Steinau, *Essay on Hereditary Diseases and Intermarriage;* Devay, *Du Danger des Mariages Consanguins,* (1862); Boudin, *Dangers des Unions Consanguins,* etc.; *Annales d'Hygiène Publique* (1862); Ribot's *Hérédité* (1874); etc.

INTERMAXILLARY, a. *ĭn'tĕr-măks-ĭl'lĕr-ĭ* [*inter,* between, and *maxillary*]: situated between the maxillaries or jawbones.

INTERMEDDLE, v. *ĭn'tĕr-mĕd'l* [OF. *entremedler,* to intermingle, to intermix—from *entre,* between, among; *medler,* to meddle: *inter,* between, and Eng. *meddle*]: to interfere in the affairs of others officiously or without right. IN'TERMED'DLING, imp. *-mĕd'lĭng.* IN'TERMED'DLED, pp. *-mĕd'ld.* IN'TERMED'DLER, n. *-lĕr,* one who. —SYN. of 'intermeddle': to interpose; interfere; intercede; mediate; intervene.

INTERMEDE, n. *ĭn'tĕr-mēd'* [F. *intermède,* an interlude—from L. *intermĕdĭŭs*—from L. *inter,* between; *mĕdĭŭs,* middle]: a musical interlude, usually of a bur-

lesque kind. IN'TERME'DIAL, a. *-mē'dī-āl*, lying between or going between. IN'TERME'DIATE, a. *-mē'dī-āt* [F. *intermédiat*, that is between two]: lying or being in the middle between two extremes; being between two points; intervening. IN'TERME'DIATELY, ad. *-lĭ*. IN'TERME'DIA'TION, n. *-ĭ-ā'shŭn*, intervention. IN'TERME'DIUM, n. *-mē'dĭ-ŭm*, an intervening agent. INTERMEDIARY, a. *ĭn'tĕr-mē'dĭ-ĕr-ĭ*, intervening; N. an intervening agent; a go-between. INTERMEDIATE HARMONIES, in *music*, harmonies introduced between extreme non-related keys, while modulating from one key to the other, which harmonies prepare the ear to receive the new key. INTERMEDIATE STATE, the condition of the soul between death and the resurrection: see ESCHATOLOGY.

INTERMEDIATE, INTERMEDIARY, etc.: see under INTERMEDE.

INTERMENT, n. *ĭn-tėr'mĕnt* [from INTER 2, which see]: the action of covering with earth; burial; sepulture; inhumation.

INTERMEZZO, *ĭn-tėr-mĕt'zō:* short dramatic comic scene, with singing, peculiar to the Italian stage; introduced between the acts of an opera or play.

INTERMINABLE, a. *ĭn-tėr'mĭ-nă-bl* [F. *interminable* —from mid. L. *intermĭnābĭlĭs*—from L. *intermĭnātus*, without limits—from *in*, not; *termĭnus*, a boundary line]: boundless; endless; admitting no limit. INTER'MINABLY, ad. *-blĭ*. INTER'MINABLENESS, n. *-bl-nĕs*. INTER'MINATE, a. *-mĭ-nāt*, endless; unlimited.—SYN. of 'intermediate': unbounded; unlimited; limitless; illimitable; immeasurable; infinite.

INTERMINGLE, v. *ĭn'tėr-mĭng'gl* [*inter*, between, and *mingle*]: to mix together; to put some things among others confusedly; to be mixed. IN'TERMIN'GLING, imp. IN'TERMIN'GLED, pp. *-gld:* ADJ. intermixed or mingled together confusedly.

INTERMISSION, n. *ĭn'tėr-mĭsh'ŭn* [F. *intermission*—from L. *intermissĭōnem*, a breaking off, an interruption —from *inter*, between; *missus*, sent]: cessation for a time; pause; temporary interruption. IN'TERMIS'SIVE, a. *-mĭs'sĭv*, not continual; coming by fits.—SYN. of 'intermission': interruption; cessation; stop; interval; rest; disuse; abatement.

INTERMIT, v. *ĭn'tėr-mĭt'* [L. *intermit'tĕrĕ*, to leave off, to give over for a time—from *inter*, between; *mitto*, I send, I make to go; Sp. *intermitir*, to discontinue]: to cause to cease for a time; to disappear at intervals. IN'TERMIT'TING, imp.: ADJ. causing to cease for a time; pausing. IN'TERMIT'TED, pp.: ADJ. caused to cease for a time. IN'TERMIT'TINGLY, ad. *-lĭ*. IN'TERMIT'TENT, a. [F.]: ceasing at intervals: N. a disease, as fever or the ague, whose symptoms cease at certain intervals. INTERMITTENT SPRINGS, springs that cease flowing for a time at certain intervals.

INTERMITTENCE TONE: a tone produced by interrupting another tone with sufficient frequency. If a tuning fork tone be alternately cut off and allowed to reach the ear, we hear with slow frequency of the interruption first a beating, then with increased frequency a tone which rises in pitch as the interruptions become more rapid.

INTERMIT'TENT FE'VER: see AGUE: DUMB AGUE.

INTERMIX, v. *ĭn'tẽr-mĭks'* [L. *intermixtus*, mixed or mingled among—from *inter*, between; *mixtus*, mixed, mingled]: to mingle some things with others; to be mingled together. IN'TERMIX'ING, imp. IN'TERMIXED', pp. *-mĭkst'*. IN'TERMIX'TURE, n. *-mĭks'tūr*, or *-chûr*, a mass of ingredients mingled together.

INTERMUNDANE, a. *ĭn'tẽr-mŭn'dān* [L. *intermūn'dĭă*, spaces between the worlds—from *inter*, between; *mundus*, the world]: being between worlds, or between orb and orb.

INTERMURAL, a. *ĭn'tẽr-mū'răl* [L. *intermūrālĭs*, that is between two walls—from *inter*, between; *mūrŭs*, a wall]: lying between walls; within a city.

INTERN, v. *ĭn-tẽrn'* [F. *interne*, internal—from L. *internus*, interior, inward]: to put for safe keeping in the interior of a place or country; to imprison: ADJ. in *OE.*, inland; not foreign; domestic. INTERN'ING, imp. INTERNED', pp. *-tẽrnd'*, placed for safe keeping in the interior; imprisoned.

INTERNAL, a. *ĭn-tẽr'năl* [F. *interne*, internal—from L. *internus*, interior, inward; It. *interno*]: interior; the opposite of external; pertaining to the heart or centre; domestic; not foreign. INTER'NALLY, ad. *-lĭ*.—SYN. of 'internal': inner; inward; inland; intrinsic; real.

INTERNAL IMPROVEMENTS: the construction and reparation of roads, bridges, canals, harbors, lighthouses, etc., at the expense of the United States government. The constitution not having made any provision for such improvements, the execution of public works of this character became subject to the vicissitudes of party politics. Yet since 1789 funds have been perpetually appropriated by Congress for the carrying on of improvements throughout the country, so long as these lay strictly within Federal jurisdiction. Such would include lighthouses, buoys, beacons and public piers, rivers and harbors. The Federalist party, and after it the Democratic party, opposed all improvements on rivers and roads, the benefit of which passes to the several States. Yet in 1806 an appropriation was made for the construction of the Cumberland Road, which should penetrate the Western States and facilitate the mail service as well as open up unsettled territory to the increasing tide of immigration, and serve for the transportation of troops and army supplies. The Federal

Government, about the same time, undertook the construction of a road through Georgia toward New Orleans. In 1898 Congress passed a resolution in which it claimed the power to make appropriations for such internal improvements as the construction of roads and canals, and the maintenance and direction of water courses. Such roads and canals as the President should consider of Federal importance were ordered by Congress to be surveyed, and $300,000 was subscribed to stock of the Chesapeake and Delaware Canal. But there was a wide difference of opinion with regard to the constitutionality of such legislative action, and in May 1822, President Monroe vetoed the Cumberland Road bill. He supported this procedure by the declaration that Congress had acted *ultra vires*. That body, he maintained, had no right under the Constitution to carry out such internal improvements at Federal expense. President Jackson in 1830 followed Monroe's example and vetoed the Maysville Turnpike Road bill. Henceforth, the matter of such internal improvements was left to the legislation of the various States. Jackson had somewhat mitigated the force of his veto by advocating the distribution of the Treasury surplus among the various States, but when the Whigs tried to put this into execution in 1841, President Tyler by his veto put a stop to any such attempts, and they have never since been repeated. The introduction of railroads under the management of private corporations did away with the call for road appropriations, although something like a bonus was given to the projectors of new lines by the vast grants of lands which were made to them. Tracts of 40,000,000 and 50,000,000 acres were thus transferred to railroad companies. At present both the great political parties are inclined to reclaim so much of the public lands thus granted, as has not been earned by a strict fulfilment of the conditions on which the grant was made. The appropriations for internal improvements under the head Rivers and Harbors for the year 1906 was $26,561,281.75 as against $10,872,200 in 1905. In the first session of the 59th Congress in 1907, $17,254,050.04 was appropriated.

INTERNAL REVENUE SYSTEM, of the United States, properly all taxation except that of foreign goods at customs offices; but in use restricted to what were formerly termed excises on internal trade and manufactures, through a bureau of the Treasury Department, organized 1862. Before that time, though excises had been imposed, they were unpopular and brief. An intense dislike to them had been inherited from England, where they traditionally connoted an independent revenue for the sovereigns to free them from popular control, and arbitrary interference with private business and persons by irresponsible officials, the raw state of trade and man-

ufacture in this country made a general excise system very injurious; and the customs dues amply provided for the expenses.

The first occasion when they were resorted to was just after the adoption of the Constitution. The assumption of the State debts, and other expenses of the new government, compelled Hamilton to recommend an excise, though in the *Federalist* and elsewhere he had strongly urged its impolicy; he was also anxious to test the power of the government to enforce taxation, which the Articles of Confederation could not. In 1791, Mar. 3, a bill was passed taxing distilled spirits of domestic manufacture. In the then West (western Pennsylvania) the still was like the New England cider mill, but much more important, because the long distances and bad roads made corn unprofitable unless condensed into whiskey, hence there was open revolt, which had to be put down by national troops (1794). Direct resistance ceased, but the tax was largely evaded, and it was two years before it was extended to Kentucky and Tennessee, while the collections in North Carolina were poor. In 1794 the system was extended in fear of a war with England, but owing to unskilful choice of articles or provisions in detail, the only one which produced much was that on sugar, from the high import duty, which gave the home market to the domestic manufacturers, so that what went into excise came off customs. Stamp taxes were laid in 1797, but were of odious associations. With the election of Jefferson as President the whole system came under ban, the Democrats having always opposed it, and in 1802, Apr. 6, the entire internal taxes were repealed, with nearly $700,000 outstanding and uncollected, and which remained so. The dislike was not to the taxes as such, but to the inquisitorial methods of collection involved; and this persisted. But the War of 1812 compelled a renewal of them: unfortunately they were laid so late that the war was over before they began to produce much. They were needed to pay off the war debts, however, and were retained till 1817, Dec. 23. Thence till the Civil War no internal tax of any kind was levied in the United States.

The first real 'system'—for the others included but few articles—and which has become a standing part of our system of taxation, was inaugurated 1862, July 1, others followed, placing an enormous and very ill-distributed burden on the people, which they bore uncomplainingly for the end in view. It is almost too complimentary to call it a system, as it was an indiscriminate heaping of taxes upon every stage of every article, on labor and tools, raw materials and finished products, processes and professions. Articles paid sometimes a dozen taxes on the various stages, and another on the final one, before reaching even the wholesaler to begin a round of middlemen's profits. 'The only principle

recognized,' says David A. Wells, 'if it can be called a principle, was akin to that at Donnybrook Fair, "Wherever you see a head hit it." Wherever you find an article, a product, a trade, a profession, or a source of income, tax it!' Within the period 1861–7 no less than 25 revenue bills were passed by Congress. The incessant endeavor was to find new objects of taxation. The industrial effects of the sudden huge unequal burdens, and the political effects of the enormous revenue to spend at discretion, cannot be discussed here. The taxes did not begin to produce largely at once; in 1863 the receipts were $37,640,787.95; in 1864, $109,741,136.10; in 1865, $209,464,215.25; in 1866, the summit, $309,226,813.42. Then the items began to be stricken off, the total sinking by 1873 to $113,729,314.14: able business men have attributed part of the inflation, and consequent panic, to the sudden removal of burdens to which business had adjusted itself. The next year it touched bottom, $102,409,784.90. The taxes by this time had been reduced to about the present status, and tended to increase with the growth of the country, even rising somewhat through the bad years 1875–9. The income tax, though fairly productive—the height being $37,775,873 in 1870—was dropped in 1872; no other tax was ever so unpopular, from its prying into private secrets, and its working through informers. It is also the one which bears hardest on the most heavily burdened class of the community, the moderately salaried men in various callings. Protection leaders have repeatedly urged or hinted at repeal of all internal taxes, to prevent any reduction of customs duties; but the moral feeling reinforces the economic sense of the people in insisting on liquors and tobacco being taxed. Attempts have been made to increase the revenue from liquors by raising the tax; but the result is the reverse, the premium on fraud being too great. In 1894 the income tax was re-established, but the Supreme Court decided it unconstitutional under its particular terms. In 1898, July 1, to provide for the expenses of the Spanish War, fresh internal taxes were laid; of which the most fertile were stamps on all mercantile papers, telegrams, etc., and on patent medicines, and wines, which yielded in the ensuing fiscal year $43,837,816.66. Special taxes on bankers and amusements, and some other things, yielded several millions. In 1901 and 1902 the new taxes were all abolished. The total receipts in 1906 were $249,150,212.91.

INTERNATIONAL, a. *ĭn'tẽr-năsh'ŭn-ăl* [*inter*, between, and *national;* L. *natĭōnēs*, nations]: mutual, as between nations; regulating the intercourse between nations as international law.

INTERNA'TIONAL, The or International Workingmen's Association; an organization which grew out of the visit of some French workmen to the exhibition at London, 1862, and was formed there, 1864, at a large

gathering of working men from nearly every country in Europe. The constitution prepared by Dr. Karl Marx (q.v.), and a committee nominated at this meeting and formally approved at the first congress at Geneva, 1866, first made known to the world the wide aims of the organization. In this startling manifesto it was declared that the emancipation of the working classes was not a local and a national, but a social question, as all the mental and material degradation under which they suffer is due to the economical subjection of the man of labor, to the monopolizer of the means of labor, or in other words, the sources of life. It was hoped that the organization would be a point of union for the workingmen of the world, the largest section of mankind with identical interests, and that its machinery would give simultaneousness and uniformity to their action. Proof was soon given of its capabilities in the complete success gained in the beginning of 1867 by the bronze workers in Paris in their struggle with their employers; later in the same year in the great strike of the London tailors; and in that of the building trade in Geneva in the following year. Further congresses at Lausanne 1867), Brussels (1868), and Basel (1869), revealed a rapid change in its tendencies, and it soon became more and more identified with the most advanced socialistic and revolutionary principles, finally declaring its opposition to the principle of private property. The outbreak of the Franco-German war prevented the congress of 1870 from being held as proposed, in Paris, but gave the society an opportunity of showing itself to the world in a more favorable light as the champion of humanity against the brutality of war. The International was not connected with the Commune of Paris, but the General Council of London officially indorsed the actions of the Commune, and this may be said to have been the first point of its decline. Jealousies began within the society, which culminated at the congress at The Hague, 1872, in an open rupture between the moderate party headed by Marx, and the extreme section led by the Russian nihilist Bakunin. Marx carried the headquarters of his party to New York, but his efforts failed to prolong its life beyond its last congress at Geneva, 1874. The extreme party lingered until 1879, when disunion had made it no longer dangerous to establish authority, and it had forfeited the confidence of all reasonable revolutionists, by lending its aid to the insane risings in Spain, 1873, and by committing its faith to a gospel of universal destruction. No society now existing can make any claim to the name or the prestige of the International. (See NIHILISM; COMMUNISM; SOCIALISM). The International was more important for the possibilities that it revealed to the world than for any actual results achieved, and it is certain that at no period of its history did it correspond either in number of adherents, or in amount

of funds at the disposal of its executive, to the alarmist ideas of the governments and the great capitalists of Europe.

INTERNATIONAL BROTHERHOOD OF MAINTENANCE-OF-WAY EMPLOYEES: an American labor union, having a department of fraternal insurance. It was founded at Demopolis, Ala., in 1887, and had a membership in 1907 of over 40,000. Since its organization the society has disbursed $500,000 in death and disability benefits. It has secured increased wages for maintenance-of-way employees to the amount of $6,000,000 annually. It was actively engaged in the great strike on the Canadian Pacific Railway in 1901. The strike was settled after a struggle lasting 11 weeks, with the understanding that all members of the brotherhood would be reinstated in their former positions within two weeks; the question of wages to be left to arbitration. Sir John A. Boyd, Chief Justice of Ontario, was chosen chairman of the Board of Arbitration and awarded the employees an increase of 20 per cent. over previous wages. The brotherhood holds a charter of affiliation with the American Federation of Labor, and publishes the *Advance Advocate*, a magazine devoted to the interests of maintenance-of-way employees.

INTERNATIONAL DATE LINE: an imaginary line drawn through the Pacific Ocean somewhat irregularly, but tending in a general northerly and southerly direction and separating the islands of the Pacific Ocean in such a way that all those which lie to the east of it carry the same date as the United States, while all those on the west of it carry the same date as Japan and Australia. The nature of this line may be made clear by the following illustration: A traveller leaves New York city at noon on Sunday, and proceeds westward just as fast as the earth turns on its axis, so that he follows the sun in its apparent westward progress with such precision that he keeps it always directly south of him. It will be noon, therefore, at every place he passes. If, however, he asks the day of the week at every point of his journey, he will be told that it is Sunday at all points in the United States, and even as far west as Hawaii. This can not hold true indefinitely, however, because when he has gone entirely around the world, and has returned to New York, he will have been gone 24 hours, and will therefore be told that it is Monday noon. Everywhere in Europe, too, he would have been told that it is Monday noon.

Yet it has always been the same day to him, and there must have been some place on the journey where he was told, for the first time, that the day was Monday instead of Sunday. At this place, if he wishes to be in accord with the people that he meets, he must arbitrarily change the name of his day from Sunday to Monday. Mariners are in the habit of making the change upon cross-

ing the 180th meridian from Greenwich, England; but this fact is of no service to us if we wish to compare the date carried on one of the Pacific Islands with the corresponding date (say) at New York, because the mariners pay no attention to the local dates on the islands that they pass. The ideal way to find out where the date actually does change would be to canvass the entire Pacific Ocean, so as to find out what date is actually in use on every one of its islands at some given instant. A line drawn from pole to pole in such a manner as to keep all islands bearing one date on one side and all islands bearing the other date on the other side, would afford a perfectly definite basis for the comparison of dates, and would be the true 'International Date Line.'

No such canvass has yet been made. As a general rule, it may be said that the date now in use upon most of the different islands or groups, is the date which results from the one carried there by the first European or American colonists; and this date will presumably be different according as the colonists came from the east or the west. This is not true universally, however, because arbitrary changes in the date are known to have been made in a number of cases. For example, Alaska was first colonized by the Russians, who brought with them the Russian date. When the American settlers moved there, they carried with them the date of the United States, and this led to some considerable confusion, the Sunday of the Americans being the Monday of the Russians, in spite of the fact that the Russians still use the Julian calendar. In 1867, when Alaska was purchased from Russia, the date in use there was made to conform to that used in the United States. Again, the Philippines were discovered by Magellan, in 1521, and Manila was founded by Lagaspi in 1571. Magellan brought his date from the east, and after the islands were colonized they kept the same date as the Spanish possessions on the opposite side of the Pacific; and they therefore carried a different date from that prevailing on the neighboring Asiatic coast. This was changed in 1844, by the omission of the 31st day of December in that year from the Philippine calendar; this change bringing the date in use in the Philippines into harmony with that prevailing at Hong Kong and other Asiatic ports.

INTERNA'TIONAL LAW: body of rules established in custom or by treaty, by which the intercourse between civilized nations is governed. It is divided into public international law and private international law. 1. *Public International Law*, or the law of nations, consists of those rules which independent nations agree in considering just and fair in regulating their dealings with each other in times of peace and of war. The mode in which they arrive at this common understanding

of what is just and fair, is by comparing the opinions of text-writers who profess to set forth and collect the general opinion of civilized nations; for all these writers appeal ultimately to the principles of natural reason and morality and common sense, as the test of what they profess to be the proper rule. Treaties of peace, alliance, and commerce also define and modify the existing international law as between the contracting parties. The decisions of prize-courts, which profess to proceed on principles of natural justice, of universal application, also are declarations of this international law. The leading doctrines thus adopted are as follows: A sovereign state is one which governs itself independently of foreign powers. Dependent or confederated states must hold their relations with other states only through the nation on which they depend or in which they form a part. All independent states are held to possess equal duties and rights, whatever may be their form of government or their size and importance. In the event of a civil war in one nation, other nations may remain indifferent spectators, and treat the ancient government as sovereign, and the government *de facto* as entitled to the rights of war against its enemy. If the foreign state profess neutrality, it is bound to allow impartially to both belligerent parties the free exercise of those rights which war gives to public enemies against each other, such as the right of blockade, and of capturing contraband and enemy's property. Where a colony or province asserts its independence, and has shown its ability to maintain this independence, the recognition of its sovereignty by other foreign states is a question of policy and prudence only; but until acknowledged, courts of justice and private individuals are bound to consider the ancient state of things as remaining unaltered. When a change occurs in the person of the sovereign, or in the internal constitution of a state, all treaties made by such state which were not personal to the former sovereign, continue to be binding on the succeeding sovereign.

All sovereign states are, in the eye of international law, on a footing of equality. Each state has the right to require the military service of its own people for purposes of self-defense, and to develop all its resources in the manner it thinks fit, so long as it does not interfere with the same equal rights of other nations. When, however, one state unduly aggrandizes itself, and augments its military and naval forces beyond what all the other states consider proportioned to its position, then those other states have some ground to interfere, at least by intimating a desire for information as to the reasons for such augmentation. This, however, is considered a delicate business, and not to be attempted rashly; and it is difficult to define what is a just ground of interference. The mere acquisition of colonies

and dependencies has never been considered adequate motive for such interference. According to Wheaton (*International Law*, 88, 6th ed.), interferences to preserve the balance of power have been generally confined to prevent a sovereign, already powerful, from incorporating conquered provinces into his territory, or increasing a dictatorial influence over the councils and conduct of other independent states. International law concerns itself only with states *de facto*. A dependent or federated state seeking to gain a national independence, cannot be aided by foreign states without creating a condition of war with the nation in which the state formed a part. The aversion to interference has no doubt, in modern times, become stronger; and it may be taken to be now almost an axiom, that no foreign state has any just ground of interfering in what is merely an internal revolution of a state, or a mode of readjusting its own constitution; in short, each state ought to be allowed to manage its own internal affairs, and to choose whatever form of government best suits the people, for the exercise of this right can, in general, nowise affect other states. Peculiar circumstances have however been held to warrant national declarations of policy involving prohibition of certain lines of action by other nations; e.g., President Monroe's declaration that the United States would oppose any *extension* by the European powers of their system in any portion of this hemisphere, as dangerous to our peace and safety (see MONROE DOCTRINE). Likewise, when a strong nation outrages natural justice by great cruelty toward a weak nation, the right of interference by other states is claimed and has been exercised; e.g., when the Turks had committed great barbarities against the Greeks in the war for Greek independence, the allied fleets of England, France, and Russia, 1827, destroyed the Turkish fleet.

Each state has the natural right to make its own laws regulating the property and status of all the subjects within its territory. On the high seas, both the public and private vessels of every nation are subject to the jurisdiction of the state to which they belong. Offenses there committed against its own municipal laws are under jurisdiction of the state to which the vessels belong; but no right of visitation and search belongs to a nation in time of peace, though piracy and other offenses against the law of nations, being crimes not against any particular nation, but against all mankind, may be punished by any state in which the offenders can be found. The traffic in slaves is, however, not classed with piracy by the law of nations, though nations may declare it to be so as regards their own subjects; and they also enter into a compact as to that matter, as has been done by Great Britain with other nations. With regard to crimes and their punishment, though each state will

punish all crimes by whomsoever committed, if committed within its own territory, and also all crimes committed in its public and private vessels on the high seas, or in a foreign port; likewise all crimes, wherever committed, by one of its own subjects; yet it cannot arrest one of its own citizens if he is within the territory of another state; to do so would be an invasion of the municipal law of that state; hence it can only arrest its criminals in foreign states by the leave of such state, and such state is not bound to accede to such a request. Hence arises the expediency of different states entering into an extradition treaty by which they bind themselves to give up to each other criminals who have committed certain specified offenses.

The domain of a sovereign state comprises all land and water within its boundaries—including harbors, bays, and straits inclosed by its territory; and the sea to the extent of a marine league from the shore. A ship owned by its citizens is not its property, but is private property under its rule and protection. In a foreign port, the vessel and its crew are amenable to the laws of that foreign country. Rivers separating two countries are common to both, and the boundary-line is usually held to follow the centre of the main channel.

There are certain usages or ceremonials of respect shown by one nation to another in certain circumstances, and these are founded on the theory of the equality of sovereign states. As regards the right of precedence among kings, emperors, and princes, there is nothing settled and binding, except, perhaps, that Rom. Cath. powers concede the precedency to the pope. But as regards minor matters, it is the settled courtesy for one nation to salute another by striking (lowering) the flag or the sails, or by firing a certain number of guns, on approaching a fleet or a ship of war, or entering a fortified port or harbor. Sometimes these ceremonials are regarded by express treaty, as, for example, as regards the maritime honors formerly exacted by Denmark from vessels passing the Sound and Belts at the entrance of the Baltic Sea. Certain classes of persons are generally and to a certain extent, held exempt from local jurisdiction in a foreign land; e.g., sovereigns passing through it, ambassadors duly accredited to it, the officers and men of national ships in its ports; likewise armies moving through its territory, provided that their passing is by permission of its government.

The rights of states in time of peace consist of the rights of legation and of negotiation. Every independent state has a right, in courtesy and usage, to send public ministers or representatives to, and receive ministers from, any other sovereign state with which it desires to maintain relations of peace and amity. See AMBASSADOR: ENVOY; CHARGÉS D'AFFAIRES: CONSUL.

When war is commenced between two countries, there

are certain rights acknowledged by each to exist toward the other. Before war is proclaimed, intermediate methods are sometimes adopted, with a view to avoid that last necessity; these are laying an embargo on the ships or property of the offending state found in the territory of the offended state; also taking forcible possession of the thing in controversy, also retaliating and making reprisals. When war is once declared, the first step is to seize and confiscate all the enemy's property within the territory. It becomes unlawful for the subjects of each belligerent state to trade with the subjects of the other belligerent. The test of whether a person is a subject of either state is generally his domicile; so the character of ships depends generally on the national character of the owner, as ascertained by his domicile. As regards the conduct of one belligerent state against the other, some writers have laid it down, that everything is fair against an enemy, and that no means of punishment are too severe; but this rigid rule has been much qualified by the more humane practice of modern times. Instead of putting prisoners of war to death, the practice is to exchange or discharge them on conditions. Instead of indiscriminate destruction of the enemy's property, the structures for religion and charity, public edifices, monuments of art and science, are spared. The laws of war are more unsparing at sea than on land; the practice prevails of commissioning privateers to prey on the commerce of the enemy, the captor being in general entitled to the property. When property taken is recaptured, states differ as to the mode of dealing with the property recaptured. The validity of a capture at sea must be determined in a prize court of the captor's country or of an ally, and the prize court professes to act on universal principles applicable to all countries.

For the leading doctrines regarding neutrals in time of war, see CONTRABAND OF WAR; BLOCKADE; FOREIGN ENLISTMENT ACT; NEUTRALS.

At the Congress of Paris, 1856, the ambassadors of Great Britain, France, Russia, Austria, Prussia, Turkey, and Sardinia, agreed to a joint declaration, modifying the state of the laws of war as follows: 1. To abolish privateering; 2. To adopt the maxim, 'free ships, free goods'—i.e., an enemy's goods shall not be taken in a neutral ship unless they are contraband of war; 3. To allow a neutral's goods in an enemy's ship to be free except as to contraband; 4. To abolish blockades unless they are real, and kept up by an effective force. These declarations were not acceded to by the United States, because as its national policy involved the maintenance of a navy much smaller than of other nations, it objected to strip itself of all power at sea by the abolition of privateering: but in the event of war between the countries which agreed in the declaration, the above modifications are adopted. See Wheaton's *International Law;*

Sir R. Phillimore's *Commentaries on International Law;* Sir Travers Twiss's *Law of Nations;* and shorter works by Kent (the *Commentary*, edited by Abdy), Woolsey, and Hall.

2. *Private International Law* is that collection of laws that regulates the mode in which ordinary courts of justice administer the remedies and give effect to the rights of parties where such rights were acquired partly or wholly in a foreign country, and where different remedies must otherwise have necessarily applied. In such cases, the court which administers the remedy, acting on what is called the courtesy of nations, or *comitas gentium*, endeavors to put the parties in the same position as if they were still bound by the foreign laws, and gives effect to those laws so far as they do not conflict with the native laws in essential principles. The fundamental doctrine which underlies this branch of international law is, that each subject of a foreign independent state is entitled to have the protection of his own laws so far as is compatible with the equal independence of the state whose courts administer the remedy; hence, though a court can in general administer the laws of its own state only, it may, *pro hac vice*, incorporate part of the foreign laws as part of its own remedies. Accordingly, in carrying out this doctrine, certain fair and equitable rules are adopted in dealing with foreigners in certain situations, the chief of which arise in the departments of marriage, death, intestacy, and remedies generally.

This branch of the international law has been long cultivated by the continental countries of Europe, where many learned jurists have discussed its principles. But probably owing to the insular position of the United Kingdom, little attention was given to it there; and indeed no work in the English language even incidentally treated of the subject until Joseph Story (q.v.), a justice of the U. S. Supreme Court, in 1834 produced his celebrated treatise on the *Conflict of Laws*, and gave to British lawyers a methodical view of the results at which foreign jurists had arrived. In the United States, where each independent state had its own municipal laws, which often differed materially from those of the other federal states, it was natural and inevitable that some system should be adopted in the dealings by each state with the rights of persons coming from the neighboring states; hence America preceded England in the development of this branch of the law. Story's work is still the standard authority in the United Kingdom. Since the laws of Scotland differ in many respects from those of England and Ireland, and each country has its own courts exercising independent jurisdiction, it is a matter of course that questions of conflict under these two codes of law should often arise. Not only do the courts of Scotland and England treat the laws of the

other country as foreign laws, and deal with each other in much the same way as they would deal with France or any other foreign country, but the laws of the two countries are in other respects materially different, and give rise to conflicts. On this particular branch of the law affecting England and Scotland, Paterson's *Compendium of English and Scotch Law* contains a summary of all material differences between the laws of these two countries, that are of great practical importance.

As regards marriage, the leading doctrine of the *comitas gentium* is, that it is immaterial in what part of the world a man is married provided he is married; and when once married according to the law of the place where he then is, such marriage will be held a valid marriage all the world over, and wherever he goes. This doctrine, however, is qualified in this way, that the *lex loci contractus*—i.e., the law of the place where the marriage was contracted—shall regulate the validity of the marriage only so far as any ceremony is essential to the institution of marriage; but it is not allowed to dictate who the parties are who may validly marry, nor to vary any essential part of the contract. The reason of the latter qualification is, that there may be rules of policy in one country which may prohibit marriages between certain persons, or may prohibit certain consequences, and therefore the evasion of the native law by persons going abroad for such a purpose is not to be tolerated. For example, in Scotland, marriage is treated as a mere contract, which requires no particular ceremony beyond mere mutual consent; while in England some ceremony is essential—viz., the ceremony of the marriage being celebrated in a parish church by a priest, or in a superintendent-registrar's office, if there is no priest. Accordingly, any two English persons may go to Scotland, and be married there by exchanging a verbal declaration of marriage; and if one had resided there 21 days before, they will be held to be married persons, and may immediately return to England, if so disposed. On the other hand, if two Scotch persons go to England, they cannot be married by exchanging mere verbal declarations; they must be married according to the English law, either by a priest in a church, or without one in a superintendent-registrar's office; and if so, they will be held to be married all the world over. Again, the law of England declares that no marriage shall be valid within certain prohibited degrees, e.g. no man is there allowed to marry his deceased wife's sister. Hence, if a man and his deceased wife's sister go from England to Denmark, where the law allows such persons to marry, and they there are married according to the form there prevailing, and then return to England, where their domicile is, they will not be treated as married persons, because they went to evade their own law in a matter which is considered of vital importance. It would, however, be

different if a man and his deceased wife's sister, who were Danes, and domiciled in Denmark at the time of their marriage, went afterward to England; they would in that case be treated as properly married, for their domicile was then Danish, and they had a right to follow their own law.—Another important head of private international law is as to the law which regulates succession to the property of a person deceased. On this subject, the rule is, that it is the law of the country in which a man was domiciled at the time of his death which regulates the succession to his personal property, even though such property is scattered over all parts of the world; hence, it is necessary first to ascertain where the deceased person had his domicile (see DOMICILE). The above rule as to the domicile of a deceased person governing the succession applies only to his personal property; as to his landed or real property, the succession to it is governed by the law of the country where such land is situated. Hence, if an Englishman dies domiciled in England, leaving a Scotch estate, such estate will descend according to the Scotch, and not the English law. Another important head of private international law is as to the court in which a remedy can be obtained on ordinary contracts. The rule is, that wherever a contract was made, the contract must be valid according to the law of the place where it was made, but the remedy may be had anywhere else wherever the defendant can be found. Thus, if a person makes a contract or incurs a debt in Scotland, and afterward goes to England, he may be sued in the English courts, though the English court will allow the remedy only provided that the contract was valid according to Scotch law. It is often important to know where and in what country a person may be sued: the general rule is, that one must follow his debtor, and sue the debtor in whatever country such debtor resides.

INTERNECINE, a. *ĭn'tėr-nē'sīn* [L. *internĕcīnŭs*, deadly, murderous—from *inter*, between; *nĕcō*, I slay or kill]: seeking mutual destruction; deadly; murderous.

INTERNEURAL, a. *ĭn'tėr-nū'răl* [L. *inter*, between; Gr. *neuron*, a nerve]: situated between the neural processes or spines.

INTERNODE, n. *ĭn'tėr-nōd* [L. *internōdĭŭm*, the space between two knots or joints—from *inter*, between; *nōdŭs*, a knot]: in a *plant*, the portion of the stem between two nodes or leaf-buds; a portion of any elongated body between two nodes or thickenings. IN'TERNO'DIAL, a. *-dĭ-ăl*, lying between nodes or joints.

INTERNUNCIO, n. *ĭn'tėr-nŭn'shĭ-ō* [L. *internuntĭŭs*, a messenger between two parties—from *inter*, between; *nuntĭŭs*, a messenger: It. *internunzio*]: a messenger between two courts or governments; a representative of the pope at small states or republics. INTERNUNCIAL, a. *ĭn'tėr-nŭn'shal*, pertaining to an internuncio.

## INTEROCEANIC SHIP CANAL.

INTEROCEANIC SHIP CANAL. projected artificial water-way across the narrow strip of territory connecting N. and S. America, to facilitate the commerce of the world by shortening the time of passage between the Atlantic and Pacific oceans. The accomplishment of this scheme has been the hope of navigators almost from the discovery of the continent, and has engaged the attention of sovereigns, govts., and engineers since Galvas proposed to Charles V. of Spain a short-cut canal 1528. The earliest known surveys were made under authority of an order issued by Charles V. to Cortez 1534, and the Nicaraguan route was suggested as early as 1551. The importance of the undertaking was kept before the public from the inception of the idea. Under William Pitt a British expedition was sent to explore the region of the San Juan river, as preliminary to the construction of an interoceanic water-way by British capital and under British control 1780: the then republic of Central America made a contract with the U. S. govt. for the creation of a canal on the Nicaraguan route 1825, and when the lack of capital had prevented any work being done, renewed the effort with no better success 1831: King William I. of Holland sent Gen. Nerveer to Guatemala to negotiate a contract for building a canal, and was about beginning work when the revolution of 1830 caused that and other royal schemes to be abandoned, the French people became interested in the subject 1842, when Louis Napoleon—then a prisoner at Ham—received proposals from Central America to undertake the direction of construction; also soon afterward when the govt. of Louis Philippe sent an engineer to prepare plans through the Isthmus of Panama; and again in 1846, when Napoleon was invested by the govt. of Nicaragua with full power to organize a company in Europe for the construction of 'the Canal Napoleon de Nicaragua;' Great Britain renewed her interest 1848, when she seized the town and harbor of Greytown, the projected terminus of the Nicaraguan route; and the United States became more directly connected with the territory and project 1851, when the Nicaragua transit route was established (to facilitate quicker travel to the Cal. gold region) on what is almost the identical line of the present Nicaraguan scheme. Napoleon subsequently admitted that beside the construction of a canal from ocean to ocean, he had in his mind the establishment of a powerful empire in Central America; and Felix Belly, who had the full confidence of Napoleon after he became emperor, labored in Nicaragua with the same end in view, and 1858, May 1, secured the signing by the govts. of Nicaragua and Costa Rica of the 'Rivas Convention,' by which Belly and a firm of Paris bankers were given the concession of an interoceanic canal by the San Juan river and Lake Nicaragua. Another concession was made to the French 1868, when Michael Chevalier, also

an intimate of Napoleon, was the active agent. For a time this arrangement looked promising of systematic work; but the Franco-German war put an end to all French enterprise in that quarter. Citizens of the United States believed that Great Britain held Greytown simply to prevent the construction of a canal by their capital with that town as the Atlantic base, and one of the objects held in view by William Walker, the noted filibuster, was to secure possession of the whole isthmus in order to promote the building of the canal by friends in the United States.

While these movements were in progress, individuals, corporations, and the U. S. govt. (by the navy dept.) were occupied from time to time in the study of the great problem. While 'Commodore' Vanderbilt was operating the Nicaragua transit route, he and other capitalists organized the American Atlantic and Pacific Ship Canal Company, and under his direction Orville Whitmore Childs, an engineer of high repute, made a thorough survey, maps, and estimates for a route from Brito on the Pacific to Greytown on the Atlantic *via* Lakes Nicaragua and Managua and the San Juan river. Vanderbilt undertook the work, but soon afterward abandoned it and disposed of his interests in Central America. Frederick M. Kelley, of New York, had surveys, made of the Upper Atrato region 1853, 4, 5, and the San Blas 1863; and his engineers favored a route by the Atrato and Truando rivers. In 1870 the U. S. govt. sent Capt. Selfridge, of the navy, to survey the various routes suggested, and he recommended that by the Atrato and Napipi rivers. His expedition was followed by one under Capt. Lull, which surveyed the Panama and Nicaragua routes, and another under Capt. Schufeldt, which applied itself to the Tehuantepec route across Mexico. In 1875 a commission was appointed by the sec. of the navy, consisting of Gen. A. A. Humphreys, chief of engineers, U.S.A.; Com. Daniel Ammen, U.S.A., and Capt. C. P. Patterson, of the U. S. coast survey, to report upon the various routes that had been surveyed; and again the Nicaraguan route was recommended. In 1876 and 1880 Chief-Engineer Menocal, U.S.N., made further surveys of this route for the Nicaraguan govt.; 1885 the U. S. navy dept. sent Engineers Menocal and Peary on similar duty; 1887 a private corporation of citizens of the United States obtained a new concession from Nicaragua, and the navy dept. again detailed Engineers Menocal and Peary for surveying duty; 1888 final surveys of the Nicaraguan route were made; and 1889, Feb., the U. S. congress passed and the pres. signed a bill to incorporate the Maritime Canal Company of Nicaragua, Commander Robley D. Evans, naval sec. to the U. S. Light-house Board, was given a year's leave of absence to enable him to serve as supt. of construction for the company, some diplomatic matters between Nica-

ragua and Costa Rica were amicably arranged, and by July the work of constructing the canal with U. S. capital and engineers had been begun.

In 1878, Sep., an international congress of commercial geography was held in Paris under the presidency of the French minister of agriculture and commerce. Ferdinand de Lesseps, pres. of the French Geographical Soc. and of the Suez Canal Company, was one of the most active members. Under the inspiration of his opinions on the necessity, practicability, and cost of an interoceanic canal, the congress resolved to invite the international committee to meet as soon as possible to settle the question, so that the great work could be speedily begun; also resolved that the delegates on returning to their respective countries should exert all their influence to enlighten the public on the advantages of creating a new channel of maritime communication. In 1879, May, an international committee of engineers, statisticians, and scientists, met in Paris in response to the above invitation; chose De Lesseps pres.; appointed committees on statistics, economical and commercial questions, navigation, technical questions, and ways and means; unanimously favored the strict neutrality of the projected canal; and considered 8 plans for a canal presented with maps, surveys, and estimates. The committee gave the most attention to the Panama and Nicaraguan routes, and in the discussion De Lesseps—who had secured control of a concession for the Panama route granted by the U. S. of Colombia, organized a company, and was soliciting subscriptions in Europe and America—argued strongly in favor of a tide-level canal *via* Panama, and declared that a lock canal *via* Nicaragua would be unprofitable and liable to great injury by earthquakes. On a motion to designate a route, the majority of the committee voted in favor of the canal *à niveau*, or the Panama project; and 1880, Jan. 1, the first spadeful of earth was turned at Panama. For several years the French people subscribed liberally to the capital stock of the company, stimulated by De Lesseps' success, with the Suez canal project, his engineering and financial abilities, and his enthusiastic declarations of the speedy completion of the work and the large dividends that it would yield. The American committee, of which Richard W. Thompson, who resigned the office of sec. of the navy 1881 for the purpose, was appointed chairman, met with no appreciable success in raising funds. Before work was begun De Lesseps estimated the cost of the Panama canal at $94,511,363; in 1880 he gave two estimates: $131,600,000 and $106,000,000. In 1882 he obtained a 5 per cent. loan of $25,000,000; 1883 a 3 per cent. of $60,000,000; 1884 a 4 per cent., $38,738,700; and 1886 a 3 per cent. of $120,000,000, making with ¾ of the share capital called, $44,250,000, a total obligation of $287,988,700, for which,

however, owing to discounts of from 12½ to 55 per cent. he received in cash $180,435,000 only. In 1887 the company decided to build the canal on the lock system, which De Lesseps had vigorously opposed from the start, and early in 1888 it announced that its debt in stocks and bonds, including a new loan of Mar. 14, was $357,923,000, on which interest, fixed charges, and expense of management amounted to $20,000,000 per annum. In 1888 new shares were issued with face value of $22,000,000 at 3 per cent.; and in June of that year 400,000 lottery shares at $80 face value each were taken in France at $72 each, with a guarantee of $3 per annum interest. In Nov. following, a second emission for the 1,170,000 shares remaining took place, and resulted in a complete failure, though the lottery scheme provided for 6 grand prize drawings each year, with 3 prizes of $100,000 each, 3 of $50,000 each, 6 of $20,000 each, and numerous smaller prizes. On Dec. 15, the company defaulted on the payment of a quarter's interest on the bonds issued just before the lottery bonds. This was followed by the resignation of De Lesseps and his colleagues from the company, the appointment by the tribunal of the Seine of a committee to settle the company's affairs, the refusal of the French govt. to give the canal an official character by a state guarantee, the report of the liquidators that a reissue of unsold lottery bonds under par would realize $2,500,000 and save the canal, the abandonment of this project through the unwillingness of the govt. to sanction it, the discontinuance of all work on the canal 1889, May 7, and the consequent reversion of all the machinery and other property of the company to the govt. of the U. S. of Colombia.

Of the 8 plans presented to the international committee at Paris 1879, three were for routes *via* Panama; two *via* Nicaragua; one by the Tehuantepec in Mexico, with termini in the Bay of Vera Cruz and the Gulf of Tehuantepec; one by the Atrato-Napipi, with termini in the Gulf of Darien and the Bay of Chiri-Chiri; and one by the San Blas across the narrowest part of the isthmus. The Panama routes included the American plan of Capt. Lull and Engineer Menocal for a lock-canal starting at the Bay of Colon and terminating in the Bay of Panama; length 45·45 m., cost $96,000,000, time of transit 2·5 days; the French plan of Capts. Wyse and Reclus for a sea-level (*à niveau*) canal, beginning at Colon, piercing 25,263 ft. of mountain, and terminating in the Bay of Panama, with a lateral canal at Matachin; length 46·6 m., cost $95,000,000; and the French plan for a lock-canal by the same engineers, involving the converting of the Chagres and Rio Grande rivers into two lakes, and their connection by a cutting, and a descent at Colon and Panama by means of 5 locks; length 45·36 m., cost $85,600,000, time of transit 2

days. The Nicaragua routes included the favorite American plan presented by Capt. Lull and Engineer Menocal, extending from the harbor of Greytown on the Caribbean Sea at the mouth of the San Juan river, along that stream to the mouth of the San Carlos, thence through Lake Nicaragua a distance of 56 m., to a point near the Rio del Medio, through the Rio Grande, across Rivas pass, and terminating in Brito harbor, near the mouth of the Rio Grande, with breakwaters at Greytown and Brito and 10 locks at each end of the lake; length 180 m., extent of artificial work 62 m., cost $52,577,718 or with allowance for errors, etc., $65,722,147, time of transit 4½ days; and the French plan of engineer Blanchet for a combined lock-and-level canal, extending the level of Lake Nicaragua into the San Juan river by a dam, converting the Rio Grande valley into a lake similarly, cutting Greyscoyal pass, and erecting locks at Brito; length 182·4 m., cost $72,400,000, time of transit 4½ days.

The failure of the Panama Canal Company stimulated interest in the Nicaragua route, and work on that line was vigorously pushed after the incorporation of the company by the U. S. congress. By survey of 1885, the cost of the canal was estimated at $65,000,000, and by the final one in the winter of 1887–8, that figure was reduced to $50,000,000, with an allowance of $1,767,000 for improvement of Greytown harbor and the construction of a breakwater 3,000 ft. out into the Caribbean Sea. The summit-level of the canal will be 110 ft. above mean sea-level, and will be reached at each extremity by 3 locks, each 650 ft. long and 65 ft. wide. An artificial lake and repairing basin for ships in transit will be created by means of a dam across the San Juan and an embankment across the San Carlos near their junction; and from the last lock to Greytown on the e., and to Brito on the w., the canal will be enlarged, forming extensions of the harbors, where vessels can pass each other without detention. The last survey (1887–8) shows a total length from Greytown to Brito of 169·8 m., of which 139·9 are free navigation, and 29·9 excavation. The saving of 9·9 m. of excavation reduces the cost of the 1885 survey, $65,000,000, to $50,000,000, and the time of construction to a little less than 6 years. The most serious engineering difficulties in the entire work were said to be the great divide cut across the San Francisco range, which would be through a 3 m. stretch of rock with an average depth of 120 ft., and the restoration of the harbor of Greytown, long ago destroyed by silt deposit from the San Juan river. It was estimated that when completed 32 vessels could pass through any lock in the canal in one day.

In 1892, Nov., M. Delahaye, member of the French chamber, declared that the privileges which the Panama company had obtained had been used to bribe a number

of the deputies and to defraud the investors. An investigation led to the prosecution of the directors. Fortunately for them Baron Reinach, a financier charged with a large part of the corruption of the company, died suddenly. It was said he had committed suicide.

The investigation was pursued amid much clamor, and a gigantic swindle was exposed. Over 83,000,000 francs were spent on 'advertising'; 500,000 francs for 'political purposes'; deputies, 150 it was said, were bribed; the influence of several newspapers was bought, and the chief of the detective bureau had been in the pay of the directors. Nearly 2,500,000,000 francs had been spent in the attempt to cut the canal.

Ferdinand and Charles De Lesseps, accused of fraud and bribery, were brought to trial 1893, Jan. 10, found guilty, and sentenced, Feb. 14, to imprisonment for 5 years and to be fined 3,000 francs. Among others M. Eiffel was sentenced to 2 years' imprisonment and a fine of 20,000 francs. The sentence of Ferdinand De Lesseps was not executed and he was allowed to die in peace (1894, Dec. 5).

Later, evidence was produced which involved M. Bourgeois, a minister, M. Baihaut, former head of the department of public works, M. Soinoury, chief of the detective bureau, Dr. Cornelius Herz, a lobbyist, and Arton, one of the leaders in the bribing of ministers. Baihaut confessed to having been bribed with 375,000 francs and was sentenced to 5 years' imprisonment, loss of civil rights, and a fine of 75,000 francs. Arton and Dr. Herz escaped. In his absence the former was sentenced to 20 years' penal servitude, 5 years' civil degradation, and a fine of 400,000 francs. Herz, who had withdrawn to England, was pursued by the French government, which strove without success to obtain his extradition. Eventually a compromise was effected, and, on payment of 300,000 francs by Herz, all civil suits against him were withdrawn, as was also the demand for his extradition. The sentences on those imprisoned were soon set aside on technical grounds, and within a year all were set free.

In 1894, Sep., 300,000 new shares of stock were issued. Although this issue was made to renew operations, it was not until the end of 1895 that serious work was resumed. Then about 2,000 men were set at work. In 1896 these employees struck for higher wages, but the work was continued.

The course of the promoters of the Nicaragua ship canal ran somewhat more smoothly. A company with $10,000,000 capital to aid in the building of the Nicaragua canal was formed in San Francisco 1893, but later that year the Nicaragua Canal Construction Co. was in financial trouble. When reorganized by New York capitalists it had $12,000,000 capital. In 1894 (Jan. 22) a bill asking for government help was presented in the

U. S. senate. After considerable delay it was passed by that body only to be neglected in the house of representatives. But the U. S. govt. appointed a commission to examine the route of the canal, and its report (1895, Dec.) was unfavorable to the enterprise. In 1902 the U. S. Congress passed an act for the construction of a canal on the Panama route, which provided for the purchase of the rights and property of the French Panama Canal Co. for $40,000,000. See PANAMA CANAL.

INTEROCULAR, a. *ĭn-tėr-ŏk'ū-lėr:* in *anat.* and *entom.*, situated between the eyes.

INTERORBITAL, a. *ĭn-tėr-awr'bĭt-al:* in *anat.*, between any orbits, as those of the eyes.

INTEROSCULANT, a. *ĭn-tėr-ŏs'kū-lant:* connecting two different assemblages of any kind, as a variety connecting two species, a species two genera, a genus two families, a family two tribes, a tribe two orders.

INTEROSSEAL, a. *ĭn'tėr-ŏs'sĕ-ăl* [L. *inter*, between; *ossĕŭs*, made of bone—from *os*, a bone]: situated between or within the bones: also IN'TEROS'SEOUS, a. *-ŏs'sĕ-ŭs.*

INTEROSSEI, n. *ĭn-tėr-ŏs'sē-ī:* in *anat.*, two sets of muscles in the hands and feet. The dorsal interossei, four in number, withdraw the fingers from the middle line of the hand; the three palmar draw the fingers together; there are corresponding muscles in the foot, four dorsal and three plantar.

INTERPELLATION, n. *ĭn'tėr-pĕl-lā'shŭn* [F. *interpellation*, a summons, a call for a reply—from L. *interpellātiōnem*, a hindrance—from *inter*, between; *pello*, I drive, I interrupt]: an interruption of one speaking; a question; a summons or citation; any point raised in the course of a debate. INTER'PELLATE, v. *-lāt*, to break in upon or interrupt a debate, by raising another question; to put a question. INTER'PELLATING, imp. questioning; putting a question publicly for information. INTER'PELLATED, pp.

INTERPENETRATE, v. *ĭn'tėr-pĕn'ĕ-trāt* [*inter*, between or among, and *penetrate*]: to penetrate within or between substances, so as nearly to effect union; to influence widely and deeply. IN'TERPEN'ETRATING, imp. IN'TERPEN'ETRATED, pp. IN'TERPENETRA'TION, n. *-trā'shŭn*, the act of penetrating deeply within or between; an influence deeply effected and widely felt.

INTERPETIOLAR, a. *ĭn'tėr-pĕt'ĭ-ō-lėr* [*inter*, between, and *petiolar*]: in *bot.*, situated between the petioles or bases of opposite leaves.

INTERPHALANGEAL, a. *ĭn-tėr-fa-lăn'jē-al:* in *anat.*, between the phalanges of the hand, or feet. There are interphalangeal articulations of both.

INTERPLEAD, v. *ĭn'tėr-plēd'* [*inter*, between, and *plead:* F. *entreplaider*]: in *law*, to discuss a point incidental to the principal cause. IN'TERPLEAD'ER, n. the

discussion of an incidental point, before the principal cause can be determined; a bill in equity praying for the safety of the person exhibiting it. INTERPLEADER SUIT, suit to determine which of several parties claiming the same thing is entitled. See MULTIPLEPOINDER.

INTERPOLATE, v. *ĭn-tėr'pō-lāt* [L. *interpŏlātus*, given a new face or appearance to, repaired, interpolated—from *inter*, between; *pŏlĭō*, I trim or deck: It. *interpolare:* F. *interpoler*]: to insert unfairly; to foist or thrust in; to add a word or passage to what has been written by another; to alter a book or manuscript; in *math.*, to fill up intermediate terms. INTER'POLATING, imp. INTER'POLATED, pp. INTER'POLATOR, n. *-tėr*, one who. INTER'POLA'TION, n. *-lā'-shŭn* [F.—L.]: the act of interpolating; something inserted spuriously; a word, line, verse, sentence, part of a sentence, or whole passage, inserted usually with a view to secure respect for some opinion by the apparent support of antiquity, or of those whose authority is greatest. Many instances of interpolation are well known, and others are with great probability suspected, in which the works of early Christian writers have been tampered with, to make them yield support to novel doctrines and practices. In *math.*, the operation or method of finding, from a few given terms of a series, other intermediate terms; in *nav.*, the finding a value of an element which falls between two given values; the inserting between two members of a series increasing according to a certain law, of other members such as, if not absolutely, yet very nearly, may accord with the same law.

INTERPOSE, v. *ĭn'tėr-pōz'* [L. *interpŏsĭtus*, placed or set between—from *inter*, between; *pōnō*, I place: F. *interposer*, to interpose]: to place between, as a hindrance or obstacle; to offer, as aid or services; to step in between persons at variance; to interfere; to mediate. IN'TERPO'SING, imp. IN'TERPOSED, pp. *-pōzd.* IN'TERPO'SER, n. *-zėr*, one who. IN'TERPO'SAL, n. *-zăl*, or INTERPOSITION, n. *ĭn-tėr'pō-zĭsh'ŭn* [F.—L.]: a placing or coming between; mediation between parties at variance; intervention; that which is interposed; intervening agency.—SYN. of 'interpose': to intercede; interfere; intermeddle; intrude; offer; interrupt.

INTERPRET, v. *ĭn-tėr'prĕt* [F. *interpréter*—from L. *interprĕtārī*, to explain or expound—from *inter'prĕs*, an expounder: It. *interpretare*]: to explain or unfold the meaning of; to expound; to decipher; to give a solution to. INTER'PRETING, imp. INTER'PRETED, pp. INTER'PRETER, n. *-prĕt-ėr*, one who or that which explains; an expositor; one who in a court of law translates or explains the evidence of foreigners; a translator of languages. INTER'PRETABLE, a. *-prĕt-ă-bl*, that may be interpreted. INTER'PRETA'TION, n. *-tā'shŭn* [F.—L.]: the act of interpreting or expounding; explanation of what

is obscure or unintelligible; exposition; the sense given by a particular interpreter. INTER'PRETA'TIVE, a. *-tĭv* [F. *interprétatif*—from mid. L. *interprĕtātīvus*]: explanatory; containing explanation. INTER'PRETA'TIVELY, ad. *-lĭ*.—SYN. of interpret': to explain; translate; define; unfold; clear; unravel; elucidate; illustrate.

INTERPRETA'TION, in Law: determination of the exact meaning of the words of the author in a will, contract, treaty, or other important legal document that is brought to action in a court of justice. The act of determination is predicted on the assumption that, the author knew exactly what he wished to state, but from imperfect education or other causes could not, or did not use language that would show clearly his intent to others. To arrive at an exact understanding of a person's intent is so important in equity that several rules have been formulated to aid the determining authority; and these are applied where it is sought to obtain a legal construction of an ambiguous, obscure, or apparently conflicting clause in a will, deed of trust, contract, or similar document. Thus, in practice, it would be inquired: What is the actual statement? and to the answer, if insufficient, would be added whatever might be implied in the same line of usage. A word necessary to complete the sense of intent, omitted by seeming inadvertence, may be supplied in documents not wills; of words having two senses only that which conforms to the law may be considered; and all words are to be weighed in the common, popular sense, unless it is clearly evident that the writer did not understand their meaning or inserted them carelessly. Only what is stated can be considered; oral evidence to show that the writer meant a directly opposite statement or to add to or vary the terms of a written document will not be permitted by a court; but a comparison of clauses, conditions, specifications, etc., with the context or whole body of the direct statement, preamble, resolution, agreement, etc., is entirely proper. It is generally held that, when there are two repugnant clauses in a deed, which cannot stand together, the first should prevail; but in a will this rule in reversed and the last expression regarded as the testator's actual intent. In interpreting legislative bills, statutes, enactments, etc., it is first sought to ascertain the exact meaning of the writer of the document, and then the precise understanding the legislature had of it when on its passage. In the United States the higest interpreter of the federal constitution is the U. S. supreme court; acts of congress may be interpreted by subordinate U. S. courts for general observance, or by state courts for observance within the state. It is the duty of courts generally to interpret all written documents on application.

INTERREGNUM, n. *ĭn'tĕr-rĕg'nŭm* [F. *interrègne*—from L. *inter*, between, *regnum*, kingly government]: the time during which a throne is vacant: time intervening.

INTERROGATE, v. *ĭn-tĕr'rō-gāt* [L. *interrŏgātus*, questioned—from *inter*, between; *rŏgō*, I ask: It. *interrogare:* F. *interroger*]: to question; to examine by asking questions. INTER'ROGATING, imp. INTER'ROGATED, pp. INTER'ROGATOR, n. *-tėr*, one who. INTER'ROGA'TION, n. *gā'shŭn* [F.—L.]: examinations by questions asked; a question put; a mark, thus (?), to indicate that a question is asked. INTERROGATIVE, a. *ĭn'tėr-rŏg'ă-tĭv* [F. *interrogatif*—from mid. L. *interrŏgātīvus*]: expressed in the form of a question: N. in *gram.*, a word which indicates that a question is asked. IN'TERROG'ATIVELY, ad. *-lĭ*, in the form of a question. IN'TERROG'ATORY, a. *-tėr-ĭ*, containing or expressing a question: N. a question or inquiry formally put to a witness.— SYN. of 'interrogate': to inquire; ask; query.

IN TERROREM, *ĭn tĕr-rōr'ĕm* [L. for fear]: as a warning to deter or compel; as a bugbear.

INTERRUPT, v. *in'tėr-rŭpt'* [L. *interrup'tus*, separated by breaking or rending—from *inter*, between; *rum'pĕrĕ*, to burst or rend]: to stop or hinder by breaking in upon the course or progress of; to divide or separate. IN'TERRUP'TING, imp. IN'TERRUPTED, pp.: ADJ. hindered from proceeding; broken; in *bot.*, having the symmetry or regularity of outline or composition partly destroyed. IN'TERRUP'TEDLY, ad. *-lĭ*. IN'TERRUP'TER, n. *-tėr*, one who. IN'TERRUP'TION, n. *-shŭn* [F.—L.]: hindrance; that which interrupts; obstruction; interposition. IN'TERRUP'TIVE, a. *-tĭv*, tending to interrupt. IN'TERRUP'TIVELY, ad. *-lĭ*. INTERRUPTEDLY-PINNATE, in *bot.*, having a pinnate leaf in which pairs of small pinnæ occur between the larger pairs.—SYN. of 'interruption': breach; break; intervention, stop; cessation; intermission.

INTERSCAPULAR, a. *ĭn-tėr-skăp'ū-ler:* in *anat.*, situated between the shoulder-blades.

INTERSECT, v. *ĭn'tėr-sĕkt'* [L. *intersectus*, divided by cutting—from *inter*, between; *sĕcō*, I cut: It. *intersecare*]: to cut or cross mutually; to meet and cross each other. IN'TERSEC'TING, imp. IN'TERSEC'TED, pp. cut or divided into parts. IN'TERSEC'TION, n. *-sĕk'shŭn* [F.—L.]: the cutting or crossing of each other of lines or planes; the point where lines, etc., cut or cross each other.

INTERSPERSE, v. *ĭn'tėr-spers'* [L. *interspersus*, scattered among—from *inter*, among; *sparsus*, sowed, sprinkled]: to scatter here and there among other things. IN'TERSPERS'ING, imp. IN'TERSPERSED', pp. *-sperst'*. IN'TERSPER'SION, n. *-sper'shŭn*, the act of scattering.

INTERSPINAL, a. *ĭn'tėr-spī'năl*, or IN'TERSPI'NOUS, a. *-spī'nŭs* [L. *inter*, between; *spīna*, a spine, a thorn]: in *anat.*, inserted between the spinous processes of the vertebræ.

INTERSTAMINAL, a. *ĭn'tėr-stăm'ĭ-năl* [L. *inter*, be-

tween, and *staminal*]: in *bot.*, an organ placed between two stamens.

INTERSTATE TRAFFIC ON RAILROADS, etc.: traffic crossing state boundaries. Under an act of congress to regulate commerce, approved 1887, Feb. 4, an interstate commerce commission of 5 members was appointed by the pres. to inquire into the management of the business of all common carriers engaged in the transportation of passengers or property wholly by railroad, or partly by railroad and partly by water when both are used, from one state or terr. to another state or terr., or from any place in the United States to an adjacent foreign country, or from any place in the United States through a foreign country to any other place in the United States; and to authorize in special cases any such common carrier to charge less for a long distance than for a shorter one over the same line; and to prescribe the extent to which the carrier may be relieved from the 'long and short haul,' clause of the constituting act. The development of the railroad systems of the United States has no parallel in the history of any other nation. It began 76 years ago in the opening to traffic of 14 miles of the Baltimore & Ohio. The same year work was begun on the South Carolina railway, and three years later it was completed and in operation a distance of 136 miles, being at the time the longest railroad in the world. It was also the first to carry the United States mails. In 1834 the Columbia railroad, in conjunction with the canals, gave Philadelphia connection with Pittsburg, and in 1835 the Washington branch of the B. & O. was opened. In 1841 the Boston & Albany road was completed, and one year later the line was opened to Buffalo, which gave this road precedence as the longest in the world at that time. This was the beginning of the real development of the railroad interests of the United States, and so rapid was its growth that by 1907 the total mileage of the country exceeded 217,000, and represented a capital of nearly $15,000,000,000. The annual gross earnings of the various lines and systems exceeded $2,100,000,000 and they carried 750,000,000 passengers and 1,500,000,000 tons of freight. An idea of the magnitude of the traffic may be gained from the fact that a train long enough to haul this freight would reach more than seven times round the earth. The average charge for carrying this enormous tonnage was .789 of one cent per ton per mile. In 1837, at the beginning of railroading in this country, the average charges per ton per mile ranged from 4 to 10 cents, the Baltimore & Washington road showing the lowest rate, and the Boston & Providence, and the Petersburg (Va.) showing the highest rate of 10 cents. The Winchester & Potomac and the Boston & Lowell charged 7 cents each, and the Mohawk & Hudson and Portsmouth & Roanoke each 8 cents.

INTERSTELLAR, a. *ĭn'tẽr-stĕl'lẽr*, or IN'TERSTEL'-

LARY, a. *-ler-ĭ* [L. *inter*, between; *stella*, a star]: among the stars; beyond the limits of our solar system.

INTERSTICE, n. *ĭn'tĕr-stĭs*, or *ĭn-tĕr'stĭs* [F. *interstice*—from L. *interstĭtĭŭm*, distance or space between—from *inter*, between; *sistĕrĕ*, to stand, to place]: a space which stands between things; a narrow or small space between things closely set; a small intervening space. IN'TERSTI'TIAL, a. *-stĭsh'ăl*, pertaining to or containing interstices. INTERSTI'TIALLY, ad. *-ăl-lĭ*.

INTERTEXTURE, n. *ĭn'tĕr-tĕks'tūr* [*inter*, between, and *texture*]: the act of interweaving; the state of being interwoven.

INTERTRIGO, n. *ĭn'tĕr-trī'gō* [L. *inter*, between; *tĕrō*, I rub; *trīvi*, I have rubbed]: a local condition of the skin called 'chafe' or 'fret,' consisting in redness and excoriation of a part of the skin, caused by friction.

INTERVAL, n. *ĭn'tĕr-văl* [F. *intervalle*—from L. *interval'lum*, space between—from *inter*, between; *vallum*, a wall, a trench: It. *intervallo*]: space or distance between places or things; time between two acts or events; distance between two different sounds in music.

IN'TERVAL, in Music: difference of pitch between sounds in respect to height or depth, or the distance on the staff from one note to another, in opposition to the unison, which is two sounds exactly of the same pitch. From the nature of our system of musical notation, which is on five lines and the four intervening spaces, and from the notes of the scale being named by the first seven letters of the alphabet, with repetitions in every octave, it follows that there can be only six different intervals in the natural diatonic scale until the octave of the unison be attained. To reckon from C upward, we find the following intervals: thus, C to D is a second; C to E is a third; C to F is a fourth; C to G, a fifth; C to A, a sixth; C to B, a seventh; and from C to C is the octave, or the beginning of a similar series. Intervals above the octave are therefore merely a repetition of those an octave lower; thus from C to D, above the octave, though sometimes necessarily called a ninth, is neither more nor less than the same interval which, at an octave lower, is termed the second. A flat or a sharp placed before either of the notes of an interval does not alter the name of the interval though it affects its quality: for example, from C to G♯ is still a fifth, notwithstanding that the G is raised a semitone by the sharp. Intervals are classified as Perfect, Major, and Minor. Perfect intervals are those which admit of no change whatever without destroying their consonance; these are the fourth, fifth, and the octave. Intervals which admit of being raised or lowered a semitone, and are still consonant, are distinguished by the term *Major* or *Minor*, according as the distance between the notes of the interval is large or small. Such intervals are the third and sixth; for example, from C

to E is a major third, the consonance being in the proportion of 5 to 4; when the E is lowered a semitone by a flat, the interval is still consonant, but in the proportion of 6 to 5, and is called a minor third. The same description applies to the interval of the sixth from C to A, and from C to A flat. The second and seventh, though reckoned as dissonances, are also distinguished as major and minor. The terms 'extreme sharp' and 'diminished' are applied to intervals when they are still further elevated or depressed by a sharp or a flat. For the mathematical proportions of intervals, see HARMONICS.

INTERVENE, v. *ĭn'tĕr-vēn'* [F. *intervenir*—from L. *intervĕnīrĕ*, to come between—from *inter*, between; *vĕnĭō*, I come: It. *intervenire*]: to come or be between persons or things; to happen between acts or events; to come between points of time; to interpose. IN'TERVE'NING, imp.: ADJ. coming between persons, things, events, or points of time; intermediate. IN'TERVENED', pp. *-vēnd'*. IN'TERVEN'TION, n. *-vĕn'shŭn* [F.]: act of intervening; state of being or coming between; interposition.

INTERVERTEBRAL, a. *ĭn'tĕr-vĕr'tĕ-brăl* [*inter*, between, and *vertebral*]: situated between the vertebræ or joints of the spine.

INTERVIEW, n. *ĭn'tĕr-vū* [OF. *entreveu*, beheld—from *entre*, between; *veu*, pp. of *voir*, to see—from L. *vĭdērĕ*, to see: *inter*, between, and Eng. *view*]: a mutual sight or view; a formal or appointed meeting; a conference. INTERVIEW, v. *ĭn'tĕr-vū'* [an Americanism]: to visit a high personage, a literary character, or one who has become famous or notorious, for the purpose of obtaining correct information of incidents in life, or of opinions. INTERVIEW'ING, imp. IN'TERVIEWED', pp. *-vūd'*.

INTERWEAVE, v. *ĭn'tĕr-wēv'* [*inter*, between, and *weave*]: to intermix; to weave together; to intermingle. IN'TERWEAV'ING, imp. IN'TERWEAVED', pp. *-wēvd'*. IN'TERWO'VEN, pp. *-wō'vn*, woven among: ADJ. intermixed or worked in as a part.

INTESTATE, a. *ĭn-tĕs'tāt* [F. *intestat*—from L. *intestātus*, that has made no testament or will—from *in*, not; *testor*, I bear witness, I make a last will and testament: It. *intestato*]: dying without having made a will; not disposed of by will: N. a person who dies without making a will. INTESTACY, n. *-tă-sĭ*, the state of dying without having made a valid will. Every person has the right, as one of the incidents of ownership, of regulating the succession of his property after his death; i. e., of executing a will which must comply with certain requisites, so as to show that it was solemnly and deliberately made, by which will the owner can give his property to whomsoever he pleases. There is some restriction on the right of testing or bequeathing property; but in all places the principle is, that if no will, or deed equivalent to a will, is executed or, if a will executed is invalid from

defeet of form, then an intestaey oeeurs, and the law provides an heir or next of kin, in lieu of the owner himself doing so. See HEIRS: SUCCESSION: WILL. A person may die partly intestate, for his will may have included only some of his property, in which ease the property not so ineluded goes to the heir-at-law, or next of kin, aeeording as it is real or personal estate, as if no will had been made. But it is often a difficult question in construing the will, whether the property not specially mentioned was not eonveyed by general words to the residuary legatee or devisee—a question which turns entirely on the language used in each ease.

INTESTINE, a. *ĭn-tĕs'tĭn* [F. *intestin*—from L. *intestīnus*, inward, hidden—from *intus*, within: It. *intestino*]: eontained internally in the animal body; domestie, always in a bad sense, as intestine wars or troubles; not foreign. INTES'TINES, n. plu. *-tĭnz*, the bowels; the entrails; the eanal or tube leading from the stomach to the anus (see DIGESTION). INTES'TINAL, a. *-tĭ-năl*, pertaining to the intestines.

INTESTINES, DISEASES OF THE. It is impossible to understand the diseased eonditions of an organ without a previous knowledge of the normal functionings of the same.

There are probably no organs in the human body, which, for a eorreet judgment of their abnormal eondition, more urgently require a previous knowledge, not only of the anatomy, but also of their physiology, than the human intestines. Anyone who seeks information in this article for the diseases of the intestines, is therefore strongly recommended to read the artieles on DIGESTION, on the PANCREAS, LIVER, and also the artieles on DIET in other parts of this encyclopedia.

Our knowledge of the normal and regular proeesses that occur in the intestines has made such immense strides in the last fifteen years, that it is unavoidable to refer briefly to some of the reeent advances on this subject.

The main funetions of the intestines may be elassed under three headings: Secretion, Absorption, and Peristalsis, the latter meaning the vermicular contractions of the intestine, whereby its eontents are propelled onward from the stomach towards the reetum; and in studying the diseases of the intestines, it is well to start out from a eonsideration of these three main functions, for in addition to gross organie diseases, which befall the intestines, the symptoms will vary aeeording to the function which is most gravely interfered with. Thus we may have abnormalities of seeretion, abnormalities of absorption, and abnormalities of peristalsis.

The funetion of seeretion embraees in the intestines the production and the work done by three juiees: First the panereatie juice, second, the seeretion of the liver (the bile), and third, the intestinal juiee secreted from the walls of the intestine itself.

The pancreatic juice, which is produced in the pancreas, enters the intestine by way of the duct of Wirsung, or pancreatic duct, and the secretion of the liver enters by way of the common gall-duct. In the human being, both ducts as a rule, enter by a common opening on a slight elevation of the mucous membrane of the duodenum. The arrangement of these two ducts is such that a gallstone coming from the gall-bladder through the common gall-duct, seeking an outlet through the duodenum, may plug up not only the opening of the gall-duct, but simultaneously that of the pancreatic duct.

Very frequently a gallstone can go no farther than the papilla of Vater (the little elevation above referred to), plugging up the outlet in such a way that it acts as a ball-valve, forming an obstruction to the outflow of both the pancreatic juice and the bile; but as the pressure under which the bile is secreted and poured out is greater than the pressure under which the pancreatic juice is secreted, it happens not infrequently, in cases of gallstone disease, that the pancreas also becomes involved, for the bile not being able to escape into the duodenum, by way of the common gall-duct, owing to the obstruction of a gallstone, now forces its way into the pancreatic duct and eventually reaches the pancreatic gland itself; and whenever bile in this way reaches the pancreas, it has a very destructive effect upon the tissues of that gland, setting up an acute pancreatitis, because it produces autolysis and because the presence of bile invariably augments the action of the intestinal pancreatic ferments.

We must bear in mind that this bile is not normal bile, but that whenever gallstones are formed, the bile has an abnormal chemical composition to start with and it is this abnormal composition, together with the bacteria present in such bile, which sets up the pancreatitis when the outlet of the common gall-duct is obstructed at a point in the papilla of the Vater, thus enabling the bile to enter the pancreatic duct.

As pancreatic diseases and diseases of the gall-bladder are frequently confounded with intestinal diseases, it at once must become evident to the lay reader, that a knowledge of the physiology and pathology of these two glands is indispensable for studying intestinal diseases.

In the article *Diseases of the Stomach*, the modern conception of the process of digestion has been set forth. The main point there brought out is the dependence of one section of the digestive tract for its physiological work upon the correct performance of the work of the section that has preceded it. It will there be learned that the proper digestion in the stomach not only depends upon correct insalivation and mastication, but that there is a wonderfully interesting chemical coordination between the salivary glands and the secreting glands in the walls of the stomach. It is most likely that a substance is secreted by the salivary glands

which does not find its exit into the mouth in the saliva, but which constitutes an internal secretion and entering the blood circulation, stimulates the glands of the stomach to secretion.

We are here confronted with a chemical coordination between the functions of the salivary glands and the stomach. The secretion of the stomach, the gastric juice, contains hydrochloric acid to the amount of 2 parts per 1,000 and two, possibly three, ferments or enzymes. These are the pepsin, the ferment which digests the nitrogenous or proteid food such as meat, fish, and eggs; the rennin or chymosin, which curdles milk, for the curdling is an absolutely necessary preliminary stage to the digestion of milk; the third enzyme is a lipase, a ferment which splits up and digests fats.

When the gastric juice leaves the pylorus, it still contains considerable of the hydrochloric acid, which has not united with the food and also some of the pepsin in an active state. Pepsin is, however, effective only in an acid solution. When this acid juice enters the first part of the intestine, or duodenum, it is neutralized by the juices which it meets there, for the pancreatic juice, intestinal juice, and bile are alcaline.

The pepsin, which is still left uncombined, is precipitated very likely by the bile as an inert substance. This neutralization of the gastric juice, after it leaves the stomach, is very important for the integrity of the intestine, for there are intestinal diseases which are directly attributable to an excessively acid gastric juice, so acid that the alcalies of the juices collecting in the first part of the intestines are insufficient to neutralize it. Then there are likely to be formed the so-called duodenal ulcers.

It is clear, then, that under normal conditions the juices collecting in the first part of the intestines are more than sufficient to neutralize the acidity of the gastric juice and that this is a necessary protection to the perfect digestion in the upper part of the intestine.

In some diseases of the stomach, which lead to a constriction of its outlet, for instance, the results of gastric ulcer, the activity of the gastric juice may not only continue normal, but may even be increased, i.e. become hyperacid.

Under such condition, when the outlet is completely obstructed, the surgeon is compelled to make an artificial outlet in the curvature of the stomach by sewing to it a loop of the intestine below the duodenum. (See GASTRIC SURGERY, especially GASTROENTEROSTOMY). At the present time almost all surgeons make every effort to effect the gastroenterostomy as high up as possible, thus compelling the acid gastric contents to pass by the opening of the pancreatic and bile duct.

If the distortion and abnormalities are such that the gastroenterostomy cannot be effected in this manner, the

acid gastric contents cannot be properly neutralized, and in such cases gastroenterostomies for so-called benign obstructions of the pylorus with active gastric juice are occasionally followed in the future history of the patient by ulcers of the duodenum and jejunum.

We have thus far considered the possible abnormalities of secretion occurring in the first part of the duodenum.

The other two functions, absorption and peristalsis, though of very great interest and importance, are not so frequently disturbed in the upper part of the intestines as they are in the lower, but both require an intact structure of the bowel.

In connection with the intestinal juice of the duodenum, it is necessary to supplement what has been said by a reference to two substances which it contains and which exert a specific action upon the secretion of the pancreas and upon the secretion of the liver. These two substances are intestinal *secretin* and *enterokinase.* Secretin is a chemical substance which E. H. Starling of London, first extracted from the mucous membrane of the duodenum. This substance is not destroyed by heat and therefore it is not a ferment. When injected into the blood circulation, it starts up a secretion of pancreatic juice and it also stimulates the secretion of bile from the liver.

Under normal conditions, the formation of secretin is caused by the entrance of acid gastric chyme into the duodenum. The secretin is not poured out into the cavity of the intestines, but enters into the blood circulation, and when it reaches the pancreas it there sets up the secretion of pancreatic juice.

It has been found by Hemmeter, that when a human patient has no hydrochloric acid in his gastric juice, there is also an imperfect secretion of pancreatic juice. Thus, normal intestinal digestion depends upon normal gastric juice.

The pancreatic juice which is thus started up by secretin, contains three, possibly four enzymes: Amylopsin, which digests starches and converts them into glucose (dextrose); Steapsin, or Lipase, which splits up fats into fatty acids and glycerine; Trypsin, which digests proteids, and then there is also a milk curdling ferment. All of these four ferments are active and can do their specific work in the pancreatic juice as it is poured out from the duct, except the trypsin. When pancreatic juice is gained by inserting a cannula far into the depths of the pancreatic duct, before it touches the mucous membrane of the duodenum, it cannot digest proteids; in other words, the trypsin is inactive. But in the instant it touches the mucous membrane of the duodenum, the enterokinase activates the trypsin and then it is capable of digesting proteids.

The secretion of *secretin* and *enterokinase* depends upon a healthy condition of the membrane of the duo-

denum. If this is diseased, as occurs in catarrh of the duodenum, called duodenitis, the formation of secretin and enterokinase is disturbed; there is therefore no normal pancreatic juice formed and the entire digestion in the upper part of the intestine is deranged.

Cancers, ulcers, and gallstones, which involve this part of the digestive tract may have the same deleterious influence.

This brief recapitulation of the pathological physiology of the intestines was absolutely necessary for a proper understanding of the fundamental principles that underlie abnormal digestion in intestinal diseases.

*Classification of Intestinal Diseases.*—This will differ according to whether we view the diseases from a purely surgical or from a purely clinical or non-operative standpoint. There are many diseases of the intestines which cannot be treated in any other way except by operation. These will be found under the heading of 'Surgery of the Intestines.' They include the obstructions, adhesions, intussusceptions, invaginations, constrictions, strangulation, hernia, the gross intestinal lesions, like perforations, diverticula, and inflammations about the cecum and vermiform appendix. (See APPENDICITIS). This article will limit itself to a brief consideration of 'intestinal indigestion' or dystrypsia, intestinalis, diarrhea, constipation, enteritis, colitis, dysentery, ulcers of the intestines, malignant tumors of the intestines (the treatment of which, however, is also exclusively surgical), the displacements of the intestines, enteroptosis and coloptosis.

*Constipation and Diarrhea.*—(*a*) Constipation. Although these two names signify to the layman diagonally opposite conditions, they are frequently due to the same cause, for instance, chronic enteritis; but one may even have constipation whilst the evacuations are diarrheic, and *vice versa*.

The causes of chronic constipation are chiefly the following: (1) Procrastination and neglect in attending to the natural functions, excessive indulgence in comfort, and irregularity of habits. (2) Deficient exercise, sedentary habits, obesity. (3) Weakening of the expulsive forces of the intestinal muscles and the abdominal muscles. (4) Insufficient and improper nutrition and diet. (5) Purely nervous influences, like hysteria, melancholia, tabes. (6) Abuse of chemical agents and narcotics, tea, coffee, opium and tobacco. (7) Organic diseases of the intestines, catarrhs of the intestine, inflammations about the appendix. (8) Diseases of the stomach in which the reception of food is limited, or in which the food has to be very bland and light. (9) Local obstructions, strictures, dilatations, and tumors of the intestines.

There may be distinguished, three states of consti-

pation: (1) the atonic state; in neuropathic patients, the disease as a rule begins with this stage and the musculature of the colon is relaxed. (2) Catarrhal stage; this is demonstrated by the presence of shreds and membranes of mucus that envelope the evacuation; it always follows many years upon the first, or atonic stage. (3) Spastic obstipation; this occurs as soon as the secondary catarrhs just described and the abuse of purges have so irritated the colon that a lasting hypertonic or highly irritable or contractile state of the musculature of the colon is brought about.

As consequences of constipation, the following diseases may be mentioned: (*a*) Enteritis or *colitis membranacea*, the discharge of tubular casts or regular cylinders or ribbons of inspissated mucus. (*b*) *Mucous colic;* this is simply an exaggerated, painful stage of the preceding. (*c*) Mucous diarrheas.

*Treatment of Atonic Constipation.*—All causes must be sought out and removed. Exercise, gymnastics, bicycle riding, horseback riding, training of the abdominal muscles (see article on 'Constipation' in Hemmeter's *Diseases of the Stomach*), electricity applied to the abdominal muscles, diet.

The following diet is recommended:

Bedford Magnesia Spring water, 1 hour before breakfast.

For breakfast: Malt coffee, graham bread, and honey.

10.00 A. M.: Buttermilk and brown bread.

1.00 P. M.: All vegetables, very little meat, sweet stewed fruits, cider.

7.00 P. M.: Kefir, bread, butter, boiled eggs, also graham bread and honey.

It is considered unwise to speak of drugs in this connection because they more often cause constipation than cure it, but one of the very best treatments consists in high colon enemas of pure cotton seed oil retained all night.

In all doubtful cases, where constipation and diarrhea alternate, the patient should be treated for colitis. If diarrhea is present, the diet should be that given under Intestinal Indigestion. It must be unirritating, a so called 'bland diet.' All cold drinks must be avoided as well as fatty and very rich foods. In the morning, one hour before breakfast, one glass of hot Carlsbad Sprudel water, the same repeated at 5.00 P. M. Irrigations of the colon with hot Carlsbad water are also very beneficial.

*Enteritis* may be acute or chronic. The acute form is frequently caused by indigestions, infections, intoxications with improper food, and catching cold. Frequently the remedies used for the expulsion of intestinal worms cause acute enteritis, if employed by inexperienced persons. The symptoms are principally fever, pain, and diarrhea. The treatment is essentially like that of diarrhea. Opium must positively be avoided.

*Chronic Enteritis.*—This may be restricted to the small intestine or the large intestine, or it may involve both. We might distinguish light, medium, and grave or advanced cases of enteritis. In the light cases there is constipation or normal stool, but much distention of the small intestine; in the medium cases there is alternating diarrhea and constipation, and in the grave or difficult cases, permanent diarrhea.

*Treatment.*—Keep the body, especially the abdomen, warm. Woolen underclothing. Most careful diet. In severe cases, only soups made of toasted flour, strained oatmeal, farina, sago with one egg stirred up in each pint of soup. Toast, acorn cocoa (Eichel Kakao), imported Burgundy or claret. Before breakfast and at 6.00 P. M., hot Carlsbad Sprudel water. The Carlsbad Sprudel salts may be used where the water cannot be obtained (a teaspoonful in a pint of hot water).

*Colitis* (meteorism, flatulency), inflammation or catarrh of the colon. These are treated as described under the heading of Constipation and in the previous chapters on Enteritis. Colitis is always best treated by high colon enemas for which a heaping teaspoonful of Carlsbad salts in a pint of hot water is most serviceable. What is said under the head of 'Dysentery' also applies to colitis.

*Dysentery*, Infectious Colitis. Infectious inflammations of the colon may be caused by a variety of microorganisms; thus A. J. Lartigau, Calmette, and Adami have established the fact that this epidemic dysentery may be caused by Bacillus pyocyaneus. Hemmeter and Charles Wardell Stiles discovered certain dysenteries in children to be due to *Lamblia intestinalis*, a species of microscopic parasites which has hitherto not been known to cause intestinal diseases in America, but the organisms that interest us most in this country as most frequently causing dysenteries are principally (1) the Uncinaria or Anchylostomes, (2) *Amoeba coli*, (3) *Bacillus dysentericus* of Shiga and of Flexner.

According to Simon Flexner and Sweet, the dysentery is caused not by the *Bacillus dysentericus* itself, but by a poison which is liberated from this bacillus. This poison is called the dysentery toxin. It is first absorbed from the gastrointestinal tract, but it appears that when it is absorbed in man, at least, the poison is not active, but is again excreted after it has circulated through the liver; and when it is excreted through the walls of the large intestine this poison has become active and causes inflammation in the large intestine, which we know clinically as dysentery. When the bile is prevented from entering the intestines, in animals infected with the dysentery bacillus, the inflammation characteristic of dysentery does not develop. Whilst this holds good principally for experimental dysenteries produced in animals, it is also to a limited extent applicable to

other dysenteries in the human being, for it has been found even in the human being that operative exclusion of the colon from the digestive process by establishing a temporary fistula at the ileocecal valve, has brought about the cure of dysenteries of very long standing. It must be borne in mind that by such an operation both food and bile are prevented from entering the colon.

As far as the treatment is concerned, these investigations support the correctness of the treatment of dysentery by high colon enemas which prevent the absorption of the toxin by washing it out, and in intractable cases even operative isolation of the colon is indicated for the reasons already stated and because in those cases the colon can be flushed more readily from one end to the other.

The most effective treatment for colitis set up by the *Amoeba coli*, according to Hemmeter, consists of injections of emulsions of iodoform into the colon. He advocates, first, washing out of the colon with solutions of tannic acid (1 dram to the quart) or of quinine (1 dram to the pint) and then introducing the iodoform in an emulsion of mucilage of acacia (1 dram to the pint). The diet is the same as for chronic enteritis.

*Ulcers of the Intestines.*—Classification. There are peptic, catarrhal, toxic, embolic, infectious, uremic, and malignant ulcers of the intestines. There are also decubital ulcers caused by the pressure of extremely hard fecal concretions in chronic constipation and sometimes by the pressure of gallstones and tumors. The infectious ulcers are mostly caused by tuberculosis and syphilis. Whenever there is tuberculosis of the lungs, together with rectal fistula and bloody stools, tuberculous ulcers of the intestines must be thought of. They can occasionally be seen by inspection through the rectoscope or colendoscope.

The recognition of intestinal ulcers is very difficult and requires the experience and skill of a specialist. Whenever there are more than ten evacuations in 24 hours, containing blood, one should think of this condition. Treatment requires absolute rest in bed, the same diet as in colitis with chronic diarrhea, unirritating and bland food, and sometimes surgical operation.

*Malignant Tumors, Cancer of the Intestines.*—This is really more of a surgical condition and its consideration will be found under another heading. Eighty per cent. of all intestinal cancers occur in the rectum; 15 per cent. in the cecum, and only 5 per cent. in the small intestine. The farther down the cancer occurs in the intestical tract, the more readily it will be recognized. The symptoms are those generally observed with cancer: Cachexia, pain, constipation, hemorrhages, visible contractions, and the presence of a tumor. The only hopeful treatment is surgical.

*Enteroptosis, or Displacements of the Intestines.*—

These may be congenital or acquired. In those forms which are present at birth there is a very characteristic and unmistakable contracted form of the thorax, the angle beneath the xiphoid cartilage is very contracted; the tenth rib is not attached to the costal cartilage, as it should be normally, but is floating, that means, unattached. The acquired displacements of the intestines are caused by anything that increases the weight of the bowels, such as tumors and fecal masses, or anything that pulls it out of place, such as adhesions. The colon may then assume the shape of a capital M; it may even come to lie in the pelvis instead of passing immediately below the greater curvature of the stomach, as the transverse colon normally should. In all such cases colitis also is present.

The treatment is mainly by abdominal bandages, regimen tending to increase the amount of fat in the body, and relief of the enteritis or colitis. If there is hernia, it must be operated upon, but surgical operations aiming at replacing of the displaced intestine are, as a rule, not successful.

INTEXINE, n. *ĭn-tĕks'ĭn* [L. *intus*, within, and Eng. *extine*]: in *bot.*, one of the inner coverings or membranes of the pollen-grain, situated between the *extine* and the *exintine*.

INTHRALL, v. *ĭn-thrawl'* [*in*, into, and *thrall*]: to enslave; to shackle. INTHRAL'LING, imp. INTHRALLED', pp. *-thrawld'*, enslaved. INTHRAL'MENT, n. slavery; bondage; also spelled with EN for IN.

INTIMACY, n. *ĭn'tĭ-mă-sĭ* [L. *intĭmŭs*, most inward, very familiar: It. *intimo;* OF. *intime*, inward, secret, intimate]: close familiarity or friendship. INTIMATE, a. *ĭn'tĭ-māt*, close friendship; familiar: N. a familiar or confidential friend: V. in *OE.*, to share together as friends. IN'TIMATELY, ad. *-lĭ.*—SYN. of 'intimacy': acquaintance; familiarity; fellowship; friendship; companionship.

INTIMATE, v. *ĭn'tĭ-māt* [mid. L. *intĭmātŭs*, brought within, announced—from L. *intĭmus*, the inmost: It. *intimare;* F. *intimer*, to signify, to give notice]: to suggest obscurely or indirectly; to hint or mention briefly; to give a short or slight notice of; to announce. IN'TIMATING, imp. IN'TIMATED, pp. IN'TIMA'TION, n. *-mā'shŭn* [F.—L.]: direction or notice given; a hint; a declaration or remark; an announcement. *Note.*—INTIMATE 1 and 2 are confusedly intermingled in their spellings and meanings. INTIME, *ĭn'tĭ-mĕ* is the OE. and correct spelling of INTIMATE, as given under INTIMACY.

INTIMATE, a.: close in friendship: see under INTIMACY.

INTIMIDATE, v. *ĭn-tĭm'ĭ-dāt* [mid. L. *intimĭdātus*, frightened—from *in*, in; *tĭmĭdus*, fearful: F. *intimider*, to intimidate]: to inspire with fear, as by threats of

violence; to deter; to dishearten. INTIM'IDATING, imp. INTIM'IDATED, pp. INTIM'IDA'TION, n. *-dā'shŭn*, the act of making fearful; the state of being intimidated.—SYN. of 'intimidate': to frighten; terrify; dispirit; abash.

INTINE, n. *ĭn'tĭn* [L. *intus, within*]: in *bot.*, the inner covering of the pollen-grain; secundine.

INTITULED, a. *ĭn-tī'tūld* [F. *intituler*, to entitle, to name; *intitulé*, entitled (see ENTITLE)]: distinguished by a title—used in connection with law, and with parliament.

INTO, prep. *ĭn'tô* [*in*, and *to*]: a word which denotes entrance or passage inward; denoting the passing from one state or form to another. *Note.*—INTO comes after a verb denoting motion, and IN follows a verb denoting rest.

INTOLERABLE, a. *ĭn-tŏl'ẽr-ă-bl* [F. *intolérable*—from L. *intolĕrābĭlĭs*, insupportable—from *in*, not; *tolĕrō*, I bear or sustain: It. *intolerabile*]: that cannot be borne; insupportable; insufferable. INTOL'ERABLY, ad. *-ă-blĭ*, to a degree beyond endurance. INTOL'ERABLENESS, n. *-bl-nĕs*, quality of being not tolerable. INTOL'ERANCE, n. *-ăns* [F.—L.]: the not enduring differences of opinion or practice in others; want of toleration. INTOL'ERANT, a. *-ănt* [F. *intolérant*—from L. *intŏl'ĕrans*, or *intoleran'tem*]: not enduring, as difference of religious opinion or worship: N. one who does not favor toleration; a bigot. INTOL'ERANTLY, ad. *-lĭ*. INTOL'ERATED, a. not endured. INTOL'ERA'TION, n. *-ā'shŭn*, refusal to suffer difference of opinion or worship in others.

INTOMB. See ENTOMB.

INTONATE, v. *ĭn'tō-nāt* [L. *intŏnātŭs*, thundered forth, given out a loud sound—from *in*, in; *tŏnō*, I thunder]: to sound loudly; to modulate the voice in speaking; to utter musical notes. IN'TONATING, imp. IN'TONATED, pp. IN'TONA'TION, n. *-nā'shŭn* [F.—L.]: *literally*, a loud noise or sound; the act of sounding musical notes; utterance of words in a measured or musical way; modulation of the voice in speaking. IN'TONATOR, n. *-ẽr*, in *mus.*, a monochord or single string, stretched across a flat sound-board. Below the string is a diagram of the exact divisions of the monochord necessary for the production of the true musical scale. By means of a movable bridge, the student is able to sound the notes represented on the diagram, and so, to educate his ear to a true sense of relative pitch. INTONE, v. *ĭn-tōn'* [mid L. *intonārĕ*, to sing according to tone—from *tonus*, a tone—from Gr. *tonos* (see TONE)]: to utter a slow, protracted, musical sound; to read in a recitative or singing style; to chant. INTO'NING, imp. INTONED, pp. *ĭn-tōnd'*.

INTONING: recitative form of offering prayer, or of rendering other parts of public divine service. It

differs from ordinary reading in having fewer inflections of the voice, and these only at stated parts of the prayers, and according to certain rules. The greater part of the prayer is recited on one note, the last two or three words being sung to the proximate notes of the scale. In the longer prayers, the terminal inflection is generally omitted. The words intoning and chanting are sometimes used interchangeably; but, though there is ground common to both, each has a domain peculiar to itself. Intoning may be defined as ecclesiastical recitative, and when several voices are employed in its performance they sing, for the most part, in unison, breaking into harmony at the termination of the clause or sentence. Chanting embraces recitative and rhythm, both divisions being in continuous harmony. In the Anglican service, as performed in cathedral churches, all those parts of the ritual, speaking generally, which are not set to rhythmical music, are intoned; these embrace that part of the morning and evening service which precedes the daily psalms, the litany, and the prayers in general.

John Marbeck (1550) was the first in England to adapt the offices of the reformed church to music; his work contained melody only. He was followed by Thomas Tallis, whose period was in the reigns of Henry VIII., Edward VI., Mary, and Elizabeth. The grave melody (founded on the ancient usage) and sublime harmonies of Tallis have never been equalled, and have continued in use till the present day with but slight modification. Tallis seems to have invented the form of the Anglican chant now used for the psalms. In the Rom. Cath. Church these are sung to the Gregorian tones: see GREGORIAN CHANT. The canticles are sung to rythmical music of a more elaborated character in which form they are technically named 'Services.' The lessons, previous to the last revision (1661) of the *Book of Common Prayer*, were intoned; since then the invariable practice has been to read them.

The practice of intoning existed among the Jews at a very early period, and there is great probability that the ecclesiastical chant in present use throughout Christendom is but a modification of that which formed part of the ancient Jewish ritual. The eastern and western churches, at variance on most points, are at one on this. Mohammedans also use this mode of prayer; and barbarous tribes (American Indians and South Sea Islanders) are wont to propitiate their false gods in a species of rude chant: all which seems to point to some deeply seated instinct of human nature, and to indicate an intuitive perception of the truth, that a solemn and reverential manner, distinct from his manner of ordinary intercourse with his fellows, befits the creature in his approaches to the Creator. The Lutheran Church and the Church of England have continued the practice, though only to a permissory and non-essential extent. The latter uses it in her cathedral

and collegiate churches, and in these vast edifices its advantages over reading are strikingly manifest.

INTORT, v. *ĭn-tŏrt'* [L. *intortus*, twined or twisted round—from *in*, in; *torquĕō*, I twist]: to twist; to wreathe or wind. INTORT'ING, imp. INTORT'ED, pp. IN-TOR'SION, n. *-tŏr'shŭn*, a bending or twisting.

IN TOTO, *ĭn tō'tō* [L. on the whole]: wholly; entirely.

INTOXICATE, v. *ĭn-tŏks'ĭ-kāt* [mid. L. *intoxĭcātus*, drugged or poisoned—from *in*, into; L. *toxĭcŭm*, Gr. *toxikon*, a poison in which arrows were dipped—from Gr. *toxon*, a bow; *toxa*, bow and arrows]: to excite or stupefy with strong drink; to make drunk; to exhilarate with narcotics; to excite to a kind of madness; to infatuate; to elate to enthusiasm. INTOX'ICATING, imp.: ADJ. inebrating; possessing qualities of making drunk; elating to enthusiasm or frenzy. INTOX'ICATED, pp.: ADJ. made drunk; excited to enthusiasm or frenzy. IN-TOXICANT, n. *ĭn-tŏks'ĭ-kănt*, that which produces intoxication. INTOX'ICA'TION, n. *-kā'shŭn*, drunkenness; high mental excitement in which the judgment is obscured; an elation of the mind which causes a kind of delirium or madness.—SYN. of 'intoxication': inebriation; inebriety; ebriety; infatuation; delirium.

INTOXICATION: poisoning by any substance; specifically poisoning by alcohol; drunkenness. Whether induced by fermented liquors or by distilled spirits, it is through the alcohol contained in either that the effects of intoxication ensue. These may be considered under two heads: (1) As they immediately manifest themselves during a single act of intoxication; and, (2) As they gradually arise through the frequent repetition of the act. The one refers to the state of drunkenness simply, the other to the habit (Intemperance).

The effects of alcohol, in a single act of intoxication, vary according to the way in which the spirit has been taken. If swallowed rapidly, in large quantities or in a concentrated form, the agency is that of a powerful narcotic poison. The mode of action here is partly through a direct impression by the alcohol on the nerves of the stomach, and partly by its absorption into the blood, and its transmission thus to the brain, which is proved to take place with great rapidity. The individual falls into a deep stupor from which it is impossible to rouse him. The face is ordinarily livid, with a swollen aspect, but sometimes it is ghastly pale. The skin is covered with chilly damps; the pulse is feeble, or perhaps wholly imperceptible; the breathing is slow and weak, though sometimes laborious and snoring; the eyes are rolled upward, with contracted or, occasionally, dilated pupils; the jaws are clenched, and there are frequently convulsions. When death follows, it may ensue in a few minutes, or after a period varying from

a single hour to a day. When the quantity taken is swallowed more slowly, as in ordinary drinking, the consequences are those familiarly known as characterizing a fit of drunkenness, and are the product of the more gradual and less excessive absorption. The first effect is that of a feeling of well-being, diffused over the body, and imparted to the mind. This gradually leads to exhilaration, thence to boisterous mirth and loquacity, attended at first by a swift transition and vivacity of the ideas, but soon lapsing into indistinctness and confusion. In the increasing whirl of excitement, the individual loses all sense of prudence and self-government, betrays himself by his indiscretions, provokes pity and ridicule by his follies, or incurs danger by his recklessness. With this mental condition, the flushed face, flashing eye, and throbbing brain show, at first, the corresponding state of excitement of the bodily functions; while, with the subsequent confusion of thought, the reeling gait and the look of stolid incomprehension denote the mental stupor that has followed. In a further stage, the memory fails, the individual maunders and mumbles in his speech, and the surrounding objects, recently seen imperfectly and misapprehended, wholly cease to impress him. At length, amid other loathsome concomitants, he sinks powerless and stupor intervenes, from which he awakens to consciousness after an indefinite number of hours; but then usually to suffer from qualms of sickness and other feelings of pain and depression, entailed upon him as the reaction from his excess, and dispelled only after a still longer interval. The outline of the effects may vary. With some, the progress of a fit of drunkenness is never attended by hilarity or other conspicuous excitement, and a dreamy and subdued forgetfulness seems all that is produced or that is sought for. With some, even, it leads to a state of querulousness or of unreasoning melancholy. With others the condition is one of furious madness, hesitating at no extreme of violence and outrage.

In chronic intoxication the general health shows ultimately signs of a more deep injury. The cheeks begin to have a bloated and flabby look, with a complexion that either wears a peculiar pallor, or verges into shades of purple. The appetite fails, the digestion is impaired, the sleep is disturbed, and the vigor of frame and capacity for exertion sink accordingly, the limbs often aching and trembling, and the heart drooping, with a miserable feeling of nervous exhaustion. Even prior to this, the drunkard is often liable to those minor illusions which end in the full development of what is known as the drunkard's delirium, or *delirium tremens*, a form of temporary insanity characterized by a state of abject terror, with shaking of the limbs, the sufferer fancying he is surrounded with loathsome

animals, or that he is devoted otherwise to horrors, disasters, or crimes. One effect, and a leading one, of the customary presence of alcohol in the blood of the drinker, is fatty degeneration of the heart and the liver, and atheroma of the blood-vessels, the coats of the last becoming easily ruptured. If not cut off abruptly in his career, the life of the drunkard becomes one long malady toward its close, the final condition being usually one of imbecility of mind and weakness of body. It has been shown that, while the average expectation of future life to the temperate man at the age of 50 may be reckoned at 20 years, that of the drunkard at the same age is only four years. Again, between the ages of 21 and 30, the deaths among drunkards have been found to be more than five times, and between 31 and 50, more than four times what occur among the general community at the like ages. See DIPSOMANIA; DELIRIUM TREMENS.

INTOXICATION, or DRUNKENNESS, is, in law, no excuse for any wrong done by the drunken party. Crimes committed in a state of drunkenness are punishable in the same way as if the actor were sober, though it is discretionary in the court to mitigate the sentence. As regards contracts entered into by a drunken party, there is no peculiarity, unless the fact of drunkenness was taken advantage of by the sober party, in which case it lies on the drunken party to prove this. Cases may no doubt arise where the drunkenness may be an element of fraud, and so the contract or deed may be rescinded or set aside. The mere act or state of drunkenness, when privately indulged in, is not an offense against the law; but if it be shown in public, it may become so. Local acts impose various penalties. See TOTAL ABSTINENCE.

INTRA, *ĭn'tră:* a Latin prefix signifying 'within; on the inside; interior.'

INTRACARPELLARY, a. *ĭn'tră-kâr'pĕl-lcr-ĭ* [*intra*, within, and *carpellary*]: in *bot.*, among or interior to the carpels.

INTRACELLULAR, a. *ĭn'tră-sĕl'ū-lcr* [*intra*, within, and *cellular*]: within cells—applied to the formation of cells within cells; also called free-cell formation.

INTRACTABLE, a. *ĭn-trăk'tă-bl* [OF. *intractable*—from L. *intractābĭlĭs*, unmanageable—from *in*, not; *tracto*, I draw or drag: F. *intraitable*]: that cannot be governed or managed; stubborn; obstinate; not to be taught. INTRAC'TABLY, ad. *-blĭ*. INTRAC'TABIL'ITY, n. *-bĭl'ĭ-tĭ*, or INTRAC'TABLENESS, n. *-bl-nĕs*, quality of being ungovernable; obstinacy.—SYN. of 'intractable': perverse; cross; refractory; indocile; unteachable; violent; ungovernable; headstrong; unruly; unmanageable; untamed.

INTRADOS, n. *ĭn-trā'dŏs* [F. *intrados*, the concave

part of a vault—from L. *intra,* within; F. *dos,* L. *dorsum,* the back]: in *arch.,* the inner and lower line or soffit of an arch; the upper or outer curve being called the *extrados:* see ARCH.

INTRAFOLIACEOUS, a. *ĭn'tră-fō'lĭ-ā'shŭs* [L. *intra,* within; *fŏlĭŭm,* a leaf]: in *bot.,* situated within the axil of a leaf so as to stand between the leaf and the stem.

INTRALOBULAR, a. *ĭn'tră-lŏb'ū-lėr* [*intra,* within, and *lobular*]: within lobules or little lobes.

INTRAMURAL, a. *ĭn'tră-mū'răl* [L. *intra,* within; *mūrālis,* mural—from *mūrŭs,* a wall]: within the walls of a city; opposed to *extramural,* beyond the walls.

INTRANSIENT, a. *ĭn-trăn'shĕnt* [*in,* not, and *transient*]: not passing suddenly away.

INTRANSIGENTES, n. plu. *ĭn-trănz'ĭ-jĕn'tēz* [F. *intransigeant,* who refuses all terms—from Sp. *intransigentes,* irreconcilables—from *in,* not; *transigir,* to settle a dispute amicably]: in *F., Sp.,* and *It. political parties,* extreme radical republicans; the extreme left; extreme radicalism; the party of irreconcilables; in *Spain,* the Intransigentes combined with the Internationals in an extreme communistic movement of insurrection, 1873, June, against the federal republic.

INTRANSITIVE, a. *ĭn-trănz'ĭ-tĭv* [mid. L. *intransĭtīvŭs,* intransitive—from L. *in,* not; *transĭtus,* a passing over, a passage: It. *intransitivo;* F. *intransitif,* intransitive]: in *gram.,* denoting a verb whose action does not pass over to or affect an object—as, *I sleep, I run, I stand.* INTRANS'ITIVELY, ad. *-lĭ.*

IN TRANSITU, phrase, *ĭn trăn'sĭ-tū* [L.]: in the act or state of passing from one place to another; in transit, as, the goods were lost *in transitu.*

INTRANSMISSIBLE, a. *ĭn'trănz-mĭs'sĭ-bl* [*in,* not, and *transmissible*]: that cannot be transmitted.

INTRANSMUTABLE, a. *ĭn'trănz-mū'tă-bl* [*in,* not, and *transmutable*]: that cannot be changed into another substance. IN'TRANSMU'TABIL'ITY, n. *-bĭl'ĭ-tĭ.*

INTRANT, a. *ĭn'trănt* [L. *intran'tem,* walking into or within: It. *intrante:* F. *entrant*]: entering; making entrance.

INTRAPETIOLAR, a. *ĭn'tra-pĕt'ĭ-ō'lėr:* in *bot.,* situated between the petiole and the stem; not the same as interpetiolar with which it is often confounded.

INTRENCH, v. *ĭn-trĕnsh'* [*in,* and *trench:* F. *trancher,* to cut off]: to dig or cut a ditch round a place; to fortify with ditch or parapet; to construct hastily-thrown-up works to strengthen a force in position in the field; in *OE.,* to furrow. INTRENCH'ING, imp. INTRENCHED', pp. *-trĕnsht'.* INTRENCH'MENT, n. *-mĕnt,* a ditch and parapet for protection. INTRENCHANT, a.

*ĭn-trĕnsh'ănt*, in *OE.*, not cutting; not cut; not to be divided. INTRENCHED CAMP, the large space of ground occupied by an entire army, or a large body of troops, surrounded by works of fortification.

INTRENCH'MENT, in Fortification: in a general sense any work, consisting of not less than a parapet and a ditch, which fortifies a post against the attack of an enemy. As a means of prolonging the defense in a regular work of permanent fortification, intrenchments are made in various parts, to which the defenders successively retire when driven in from forward works. Bastions are ordinarily intrenched at the gorge by a breastwork and ditch, forming either a re-entering angle or a small front of fortification. A cavalier, with a ditch, is also an intrenchment. An army in the field often strengthens its position by intrenchments, as by a *continual line* of parapet and ditch, broken into redans and curtains, or by a *line with intervals*, consisting of detached works of more or less pretension flanking each other. See FORTIFICATION.

INTREPID, a. *ĭn-trĕp'ĭd* [F. *intrèpide*—from L. *intrĕpĭdŭs*, undaunted, fearless—from *in*, not; *trepĭdō*, I tremble at through fear: It. *intrepido*]: fearless; bold; brave; undaunted; not influenced by fear. INTREP'IDLY, ad. *-lĭ*. INTREPIDITY, n. *ĭn'trĕ-pĭd'ĭ-tĭ*, fearlessness; bravery in danger; undaunted courage.—SYN. of 'intrepidity': bravery; gallantry; valor; fortitude; courage; heroism; fearlessness; resoluteness; boldness.

INTRICATE, a. *ĭn'trĭ-kāt* [L. *intrīcātus*, perplexed, embarrassed—from *in*, in; *trīcor*, I make or start difficulties, I baffle—from *trīcæ*, hindrances, wiles: It. *intricato*]: entangled; involved; complicated; obscure. IN'TRICATELY, ad. *-lĭ*. IN'TRICATENESS, n., or INTRICACY, n. *ĭn'trĭ-kă-sĭ*, state of being entangled; perplexity; complication.—SYN. of 'intricacy': complexity; involution; entanglement;—of 'intricate': perplexed; complex; complicated; darkened.

INTRIGUE, n. *ĭn-trēg'* [F. *intrigue*—from It. *intrigo*, intrigue—from L. *intrīcō*, I perplex—from *trīcæ*, hindrances (see INTRICATE)]: a plot or scheme of a private or party kind engaged in by several persons; a love affair, usually illicit: V. to form a complicated plot or scheme; to carry on an illicit love; to plot secretly. INTRI'GUING, imp. *-trē'gĭng:* ADJ. given to secret plotting or scheming. INTRIGUED', pp. *-trēgd'*. INTRI'GUINGLY, ad. *-lĭ*. INTRI'GUER, n. *-gėr*, one who.

INTRINSIC, a. *ĭn-trĭn'sĭk*, or INTRIN'SICAL, a. *-sĭ-kăl* [L. *intrinsĕcus*, on the inner side—from *intra*, within; *sĕcus*, by, near: It. *intrinscco;* F. *intrinsèque*, intrinsic]: true; genuine; real; inherent; not merely apparent or accidental. INTRIN'SICALLY, ad. *-lĭ*. INTRINSICATE, a. *ĭn-trĭn'sĭ-kāt*, in *OE.*, entangled; perplexed.—SYN. of 'intrinsic': inward; internal; essential; in *OE.*, intimate; familiar.

INTRO, *ĭn'trō:* a Latin prefix signifying 'within; into; in.'

INTRODUCE, v. *ĭn'trō-dūs'* [L. *intrōdūcĕrĕ*, to lead or bring into—from *intro*, within; *dūcō*, I lead; *ductus*, led: F. *introduire*]: to lead, conduct, or bring in; to bring into acquaintance; to bring into notice; to make known; to import. IN'TRODU'CING, imp. IN'TRODUCED', pp. *-dūst.* IN'TRODU'CER, n. *-dū'sĕr*, one who. IN'TRODUC'TION, n. *-dŭk'shŭn* [F.—L.]: the act of introducing; the making people known to one another; the opening or preliminary part of a thing, as of a speech, a discourse, or a book; the bringing in something fresh. IN'TRODUC'TIVE, a. *-dŭk'tĭv*, serving to introduce. IN'TRODUC'TIVELY, ad. *-lĭ.* IN'TRODUC'TORY, a. *-tĕr-ĭ*, serving to introduce; preliminary; preparatory. IN'TRODUC'TORILY, ad. *-ĭ-lĭ*, by way of introduction.—SYN. of 'introduce': to bring in; conduct in; usher in; bring into; insert; present; open; begin.

INTRODUC'TION, in Music: a kind of preface or prelude to the following movement. Formerly, the introduction was found only in large musical works, such as symphonies, rondo, overtures, oratorios, etc.; but now it is found in every fantasia, polonaise, waltz, etc., on the principle that it is considered abrupt to begin all at once, without preparing the audience for what is to come. In a stricter sense, introduction is applied to the piece of music with which an opera begins, and which immediately follows the overture. In some cases, the overture and introduction are united, the composition going on without any formal pause, as in Gluck's *Iphigénie en Tauride*, Mozart's *Idomeneo* and *Don Giovanni*. As the overture, which contains a harmonical sketch of the opera, should make a permanent impression on the audience, the custom of uniting it with the introduction has very properly been discontinued, and the introduction is treated as an independent movement.

INTROIT, n. *ĭn-troyt'* or *ĭn'trō-ĭt* [F. *introit*, an entrance, introit—from L. *intro'ĭtŭs*, a going in, an entrance—from *intro*, within; *ĕō*, I go]: in the *R. Cath. Chh.*, etc., a psalm or passage of Scripture sung or chanted while the priest enters the chancel]: a musical composition appropriate for such an occasion.

INTROMISSION, n. *ĭn'trō-mĭsh'ŭn* [F. *intromission*—from L. *intrōmis'sĭōnem*—from *intromissus*, sent inside—from *intro*, within; *mitto*, I send (see INTROMIT)]: the act of introducing one body into another; insertion; in *Scot. law*, assumption of legal authority to deal with another's property; management of property belonging to another.

INTROMIT, v. *ĭn'trō-mĭt'* [L. *intromit'tĕrc*, to send in or within—from *intro*, within; *mitto*, I send]: to send in; to admit; to allow to enter; in *Scot.*, to meddle with or manage the affairs of others. IN'TROMIT'TING, imp. IN'TROMIT'TED, pp.

INTRORSE, a. *ĭn-trŏrs'* [L. *introrsum*, within]: in *bot.*, turned inward or toward the axis of the part to which it is attached—applied to anthers which open on the side next the pistil.

INTROSPECT, v. *ĭn'trō-spĕkt'* [L. *introspectus*, looked into and examined attentively—from *intro*, within; *spĕcĭō*, I look]: to look into or within; to view the inside. IN'TROSPECT'ING, imp. IN'TROSPECT'ED, pp. IN'TROSPEC'TION, n. *-spĕk'shŭn* [L. *intrōspectiōnem*, a looking into]: internal view; a view of the interior. IN'TROSPEC'TIVE, a. *-spĕk'tĭv*, looking within.

INTROSPECTION: observation of one's own mental activity. For example, one may observe his own consciousness of an apple as including particular sensations of color, odor, taste, touch, etc. These subjective effects of the object on the mind can be observed only by introspection. The pyschological description of sensation, perceptions, ideas, emotions, volitions, etc., is thus the result of the method of introspection. The English school of philosophers, from Hobbes to Hume depended almost entirely upon introspection for understanding the mind This method is now used whenever possible, under experimental conditions and is often supplemented by careful records of the bodily conditions accompanying the mental facts. Psychology thus attempts to state mental laws from introspection and to understand the bodily conditions under which the mental processes arise. The latter form a physiological explanation.

INTROVERT, v. *ĭn'trō-vėrt'* [L. *intro*, within; *verto*, I turn: It. *introvertere*]: to turn inward. IN'TROVERT'ING, imp. IN'TROVERT'ED, pp. turned inward. IN'TROVER'SION n. *-vėr'shŭn* [L. *versus*, turned]: the act of introverting.

INTRUDE, v. *ĭn-trôd'* [L. *intrūdĕrĕ*, to thrust into a place—from *in*, into; *trūdō*, I thrust or push: It. *intrudere*]: to force or thrust one's self in; to enter into without right or welcome, as into a house or company; to encroach; to trespass. INTRU'DING, imp. INTRU'DED, pp. INTRU'DER, n. *-dėr*, one who thrusts himself in without right or invitation. INTRUSION, n. *ĭn-trô'zhŭn* [F. *intrusion*—from L. *intrūsŭs*, thrust in]: the action of thrusting in, or of entering without invitation, right, or welcome; encroachment; in *Scotch law*, trespass on lands. INTRU'SIVE, a. *-sĭv*, apt to intrude; entering without right or welcome. INTRU'SIVELY, ad. *-lĭ*. INTRU'SIVENESS, n. *-nĕs*, quality of being intrusive; the act of entering without invitation. INTRUSIVE ROCKS, in *geol.*, applied to those igneous rocks which appear to have thrust themselves, while in a state of fusion, between the beds of the stratified formations.—SYN. of 'intrude': to obtrude; infringe; intrench; thrust in; enter; force in; cast in.

INTRUSION: see under INTRUDE.

INTRUST, v. *in-trŭst'*, or ENTRUST' [*in*, in, and *trust*]: to confide to the care of; to commit to the fidelity of another. INTRUST'ING, imp. INTRUST'ED, pp.—SYN. of 'intrust': to commit; confide; consign.

INTUBATION: the operation of inserting a tube between the vocal cords when there is danger of suffocation from closure of the laryngeal orifice. The device was first employed by Bouchut of Paris in 1856, but was unsuccessful and fell into oblivion. It was suggested again independently in 1880 by O'Dwyer of New York, who devised specially shaped tubes which could be retained in the larynx without danger of slipping through into the trachea and which were seldom displaced by coughing. The operation finds its greatest field of usefulness in diphtheria of the larynx (diphtheritic croup) when obstruction results from a thick deposit of false membrane on the vocal cords, and in this condition has almost entirely displaced the more serious operation of tracheotomy. As the present day, however, the necessity for either operation is practically done away with by the early use of antitoxin in the treatment of diphtheria, for now the disease seldom progresses so far as to cause the formation of a thick exudate (false membrane) on the vocal cords.

INTUITION, n. *ĭn'tū-ĭsh-ŭn* [F. *intuition;* It. *intuizione*, intuition—from L. *intŭĭtĭōnem*—from *intu'ĭtŭs*, a beholding, a view—from *in*, into; *tŭĕŏr*, I look at]: the act or power of the mind by which it at once perceives the truth of a thing without argument or explanation; any object or truth discerned by the mind without definable media. INTU'ITIVE, a. *-ĭ-tĭv*, perceived or known at once by the mind without argument or testimony; having the power of at once seeing clearly. INTU'ITIVELY, ad. *-lĭ*.

INTUITION: in philosophy: immediate knowledge, attained without deliberation or reasoning; instinctive apprehension, judgment, or feeling. Distinguished from empirical knowledge which is built up by experience. Sense perception as contrasted with the indirect presentation through imagination or conception. The term has wide use in connection with intuitional systems of ethics which set forth conscience as a function which gives direct recognition of right and wrong, either in a choice between two acts, or between two principles of action. This view was made prominent by Reid and the Scotch philosophers. In the theory of knowledge, intuition is the immediate apprehension of truth, whether that be sensory truth or necessary forms of thought (space, time, cause, according to Kant), or ultimate knowledge of the nature of God, the soul, etc. Among the mystics intuitive knowledge includes the vision of God reached in states of ecstasy. The final stages in

the knowledge of God, the universe, the self, truth, beauty, and right are regarded by some as conclusions based on evidence, by others as intuitive or direct, knowledge.

INTUITIONISM; a term used to designate loosely a wide range of philosophic theories in metaphysics, ethics and aesthetics among which the common feature is an insistence upon the existence of direct, immediate apprehension of truth, beauty or right, without any necessary dependence upon experience. In general such philosophic tendencies are set over against empirical theories. The latter have generally carried the day in modern philosophy; in so far at least as concerns the recognized necessity for the action of experience in order to give solid foundation for belief, opinion and theory of every kind. In modern literature the term has its most important bearing in ethical affairs. See ETHICS. See also, DES CARTES; LOCKE; LEIBNITZ; KANT.

INTUMESCE, v. *ĭn'tū-mĕs'* [L. *intŭmes'eĕrĕ,* to begin to swell—from *in,* in; *tŭmes'eō,* I swell up]: to enlarge or expand with heat; to swell or bubble up under the action of the blow-pipe, as certain minerals do. IN'TUMES'CING, imp. IN'TUMESCED', pp. *-mĕst'*. IN'TUMES'CENCE, n. *-sĕns* [F.—L.]: a swelling; a swelling with bubbles; a tumor. IN'TUMES'CENT, a. *-sĕnt,* swelling up; expanding.

INTUSSUSCEPTION, n. *ĭn'tŭs-sŭs-sĕp'shŭn* [F. *intus-suseeption*—from L. *intus,* within; *suseep'tĭōnem,* an undertaking; *suseeptus,* taken or caught up]: the reception of one part within another, as of a sword in a sheath; as applied to the bowels, it expresses the slipping of one portion of the intestines into, and constriction of another; the act of taking foreign matter into a living body; the growth of a cell-wall by taking up new matter throughout, instead of laying it on by opposition. IN'TUSSUSCEP'TED, a. *-sĕp'tĕd,* received into, as a sword into a sheath.

INTUSSUSCEPTION, *ĭn'tŭs-sŭs-sĕp'shŭn,* or INVAGINATION, *ĭn-văj-ĭ-nā'shŭn:* partial displacement of the bowel, in which one portion of it passes into the portion immediately adjacent to it, just as one part of the finger of a glove is sometimes pulled into an adjacent part in the act of withdrawing the hand (see INVAGINATION). In this case, the contained portion of intestine is liable to be nipped and strangulated by the portion which contains it, and all the danger of Hernia (q.v.) results, with far less chance of successful interference on the part of the surgeon or physician. It is one of the most frequent and fatal causes of obstruction of the bowels. The extent of the intussusception may vary from a few lines to a foot or more. Even when inflammation is set up, the affection, though in the highest degree perilous, is not of necessity fatal. The invaginated portion mor-

tifies and sloughs, while adhesion is established between the peritoneal surfaces of the upper and lower portions at their place of junction, so that the continuity of the tube is preserved, though a portion may be destroyed. If the patient is strong enough to bear the shock of the inflammation, gangrene, sloughing, etc., a complete recovery ensues.

INULINE, or INULIN, n. *ĭn'ū-lĭn* [F. *inuline;* It. *inulina*—from L. *inŭlă*, the plant elecampane]: white, crystalline, amylaceous matter, a variety of starch found in the root of a plant called *Inŭlă;* also found in dandelion, chicory, and other plants; the *elecampane* (q.v.) is the *Inŭlă Helēnĭŭm*, ord. *Compositæ.*

INUMBRATE, v. *ĭn-ŭm'brāt* [L. *inumbrātus*, having a shade or shadow cast upon—from *in*, into; *umbra*, a shadow]: to cast a shadow or shade upon; to shade. INUM'BRATING, imp. INUM'BRATED, pp.

INUNDATE, v. *ĭn-ŭn'dāt* [L. *inundātus*, overflowed—from *in*, into; *unda*, a wave]: to overflow or deluge with water; to cover with water; to fill with abundance. INUN'DATING, imp. INUN'DATED, pp.: ADJ. overflowed. INUNDA'TION, n. *-dā'shŭn* [F. *inondation*]: an overflow with water or other fluid; a flood; a rising and spreading of water over low grounds.—SYN. of 'inundate': to deluge; overflow; drown; flood; overwhelm; fill.

INUNDA'TIONS: floods caused usually by the overflow of a river or the ocean, sometimes by the giving way of a dam or other barrier. Since the dawn of history no century and scarcely any large country have been free from floods. The region of the Nile river in Egypt, and of the Hoang-Ho, or Yellow River, in China, have suffered most from this cause; and the Nile stands alone as at once a terribly destructive and a beneficial agent, for its overflows have not only irrigated the surrounding dry country, but greatly enriched it by spreading over it the fertilizing sediment collected and conveyed in the stream. In recent years sanitary science has greatly reduced the danger of pestilence that always follow a great flood, and that formerly was often as destructive to human life as the floods themselves. The following are some of the most noted inundations of record: 245, the sea swept over Lincolnshire, Eng., and submerged thousands of acres; 353, a flood in Cheshire, Eng., destroyed 3,000 lives and a great number of cattle; 738, an overflow of the Clyde drowned 400 families in Glasgow; 1014, a number of seaport towns of England and the Netherlands were destroyed; 1100, the coast of Kent, Eng., was deluged and the Goodwin Sands bank formed by the sea; 1108, Flanders was submerged by the sea and the town and harbor of Ostend completely covered; 1134, a large part of Flanders was again submerged; 1164, a considerable part of the coast of Friesland was swallowed up; 1170, many miles of country in the n. part of Holland were engulfed

with great loss of life; 1219, the breaking of the dikes along the Zuyder Zee caused great destruction of life and property; 1277, 44 villages in Holland were destroyed; 1282, 72 towns and villages in Holland were submerged and 100,000 persons drowned; 1287, another breaking of the dikes caused a loss of 80,000 lives; 1362, 30 villages on the coast of Nordstrand were destroyed; 1377, 50 miles of territory and 72 villages in Holland were swept away and the course of the Maas and Rhine rivers changed; 1421, by the breaking of the dike at Dort 10,000 people in the town and 100,000 in the vicinity were drowned; 1530, a general failure of the dikes caused an overflow of the low lands, and a loss of life estimated at 400,000, and of property in proportion; 1570, Antwerp, Bruges, Hamburg, Rotterdam, and Amsterdam were submerged and 30,000 inhabitants drowned; 1617, 50,000 thousand persons were drowned in a flood in Catalonia, Spain; 1634, a flood swept away several villages on the Nordland coast of Denmark, and drowned 11,038 people and 66,330 cattle, and 10,828 people and 90,000 cattle were drowned at Hamburg, Bremen, and Oldenburg; 1717, the 'Christmas' flood along the entire n. coast and in England totally destroyed 5,000 dwellings, and partially 3,500 more; 1787, mountain torrents drowned 2,000 persons in Navarre, France; 1811, 24 villages near Presburg and nearly all their inhabitants were swept away by an overflow of the Danube; 1813, large provinces of Austria and Poland were flooded and many lives lost (6,000 in Silesia, and 4,000 in Poland), and 2,000 Turkish soldiers on an island near Widdin were drowned by a sudden overflow of the Danube; 1816, the overflow of the Vistula river laid 119 German villages under water, and caused great loss of life and property; 1829, the same river broke through the dike at Dantzic, drowned a large number of people, and destroyed 4,000 dwellings and 10,000 cattle; 1830, an overflow of the Danube at Vienna flooded the houses of 50,000 inhabitants; 1833, 10,000 houses were swept away, and 1,000 persons drowned in Canton alone during the great Oct. flood; 1840, a rising of the Saone river, France, and the bursting of its banks, caused 60,000 acres to be submerged and many houses destroyed in Lyons, Avignon, La Guillotière, Voise, Marseilles, and Nismes; 1846, by the Loire flooding the centre and s.w. of France, $20,000,000 of damage was sustained; 1849, 160 squares and 1,600 buildings were flooded in New Orleans; 1852, the Hoang-Ho river in China burst its banks, cut a new bed into the Gulf of Pechili, and wrought losses beyond the facilities of the authorities to estimate even approximately; 1855, Hamburg was half submerged and suffered enormous property damage; 1861, Bengal, India, suffered great loss of life and property by a deluge in its most fertile districts, and famine and pestilence followed; 1866 the n. of England was visited ex-

tensively by floods; 1870, Rome, Italy, similarly suffered great loss; 1872, the n. portions of Italy were visited by floods that caused great damage and loss of life; 1874, the bursting of a badly constructed dam caused the destruction of several villages in the valley of Mill river, Mass., and loss of 144 lives; and 220 lives were lost by an overflow of rivers in w. Penn., caused by unusual rains; 1875, the midland and western counties of England were partially submerged with considerable loss of life; 1,000 persons were drowned near Toulouse, France, by the rising of the Gironne, and 20,000 people were rendered homeless by floods in India; 1876, destructive floods occurred in France and Holland; 1882 many persons were drowned and much property destroyed by overflows in the Mississippi and Ohio valleys; 1887, Oct., the Hoang-Ho river in China again broke its banks, deserted its natural bed, spread over a thickly populated plain, cut an entirely new road to the sea, washed away 300 villages, and submerged the lands around 300 more between Cheng-Chou and Chungmon, submerged more than 1,500 villages s. of Kaifeng, rendered 2,000,000 people homeless, and caused a loss of life estimated from 1,500,000 to 7,000,000; 1889 (May 31), the giving way of the Stony Creek dam in the Conemaugh Valley, Penn., caused the total destruction of the city of Johnstown (q.v.) and several neighboring towns, and caused a loss of about 5,000 lives, and more than $20,000,000 of property; (July 22) the Hoang-Ho river burst its banks in the province of Shan-Tung, cut a breach 2,000 ft. long, submerged 10 entire districts, and caused a loss of life 'too great to be counted,' and (Aug. 20) the Kinokuni river in Japan rose 18 ft. above its normal level, washed away the village of Iwahashi and 48 hamlets, and drowned 10,000 people in the city of Wakayamo and in the districts of Minami-Muro, Higashi-Muro, and Nishi-Muro; 1890, Mar. and Apr., the levees of the Mississippi river gave way in many places, and the waters flooded large areas of land in Mississippi and Louisiana. The worst crevasse was caused by the giving way of the Morgansea, near Bayou Sara, which was built after the flood of 1884 by the federal and state governments at a cost of nearly $250,000. In 1903 there was a great rising of the Kansas, Missouri, Mississippi, and Des Moines, rivers; several large cities, including Kansas City, Des Moines, and Topeka, were inundated, the loss of life was over 300 and of property about $10,000,000. In the same year Paterson, N. J. and the entire Passaic valley were flooded, the greatest damage being done in Paterson, the damage amounting to about $3,000,000. In 1906 Pittsburg, Pa. and vicinity were flooded, causing a loss of about $10,000,000. See FLOODS IN HISTORY.

INURE, v. *in-ūr* [OE. *in ure*, in operation—from OF. *œvre* and *eure*, work, operation: Norm. F. *enuer*, to inure. less probable, F. *heur;* OE. *ure*, hap, fortune]:

to accustom to by exposure or practice; to habituate. INU'RING, imp. INURED', pp. *-ūrd'*, hardened by use. INURE'MENT, n. habit; custom.

INURN, v. *ĭn-ėrn'* [*in*, into, and *urn*]: to inter in an urn, as the ashes of the dead; to bury. INURN'ING, imp. INURNED', pp. *-ėrnd'*.

INUTILITY, n. *ĭn'ū-tĭl'ĭ-tĭ* [F. *inutilité*—from L. *inūtĭlĭtātem*, uselessness—from *in*, not; *ūtĭlĭs*, useful, profitable]: the quality of being unprofitable; uselessness.

INUUS, or INNUUS: genus of apes, to which the Barbary Ape (q.v.) belongs. The Barbary Ape is *I. sylvanus*.

IN VACUO, *ĭn văk'ū-ō* [L. *in*, in; *vacŭŭs*, empty]: an adverbial phrase, denoting 'in a void or empty space.'

INVADE, v. *ĭn-vād'* [OF. *invader*—from L. *invādĕrĕ*, to go or get into or within—from *in*, into; *vādō*, I go or march: It. *invadere—lit.*, to go into]: to enter a country with an armed force, as an enemy; to attack; to encroach on; to violate another's rights. INVA'DING, imp. INVA'DED, pp. INVA'DER, n. *dėr*, one who. INVASION, n. *ĭn-vā'zhŭn* [F. *invasion*—from L. *invāsŭs*, gone or got into]: the entrance of a hostile army into a country for the purpose of conquest; an attack on the rights of another. INVA'SIVE, a. *-sĭv*, entering with hostile designs; aggressive.— SYN. of 'invade': to infringe; encroach; enter; go upon; assail; assault; violate;—of 'invasion': inroad; incursion; irruption; encroachment; entrance; raid.

INVAGINATE, v. *ĭn-văj'ĭ-nāt* [L. *in*, into; *vāgīna*, a scabbard, a sheath]: to operate for hernia, in which, after reduction, the skin is thrust into the canal by the finger of the operator, and there retained by sutures, etc., till adhesion ensues. INVAGINATION, n. *ĭn-văj'ĭ-nā'shŭn*, the operation for hernia as above, also sometimes applied to intussusception (q.v.); such a process as turning a hollow body inside out, so that one part is slipped inside the other, as in turning the finger of a glove inside out, or squeezing down half of a hollow ball into the other so as to produce a hemispherical cup; a similar process in the arrangement of the newly formed cells in the early development of many embryos.

INVALID, a. *ĭn-văl'ĭd* [F. *invalide*, weak, invalid—from L. *invălĭdŭs*, not strong or vigorous—from *in*, not; *valĭdus*, strong: It. *invalidare;* F. *invalider*, to annul, to make void]: of no force or weight; null; void. IN'VALID'ITY, n. *-ĭd'ĭ-tĭ*, want of legal force or of argument; informality. INVALIDATE, v. *ĭn-văl'ĭ-dāt*, to weaken or lessen the force of; to overthrow or prove to be of no value, as an argument. INVAL'IDATING, imp. INVAL'IDATED, pp.

INVALID, n. *ĭn'vă-lĭd* [see INVALID 1]: a person weak and infirm in health; a worn-out or disabled soldier or sailor: V. to put on the roll of invalids, as an infirm or

disabled soldier. IN'VALID'ING, imp., returning home or to a more healthful locality, of soldiers, or sailors incapable of active duty by reason of wounds, or the severity of foreign service. One invalided returns to his duty as soon as his health will permit. IN'VALID'ED, pp.: ADJ. registered as worn out or disabled; laid aside by sickness or infirmity.

INVALIDES, *ăng-va-lēd* [Fr.]: wounded veterans of the French army, maintained at the expense of the state. The *Hôtel des Invalides* is an establishment in Paris where a number of these old soldiers are quartered. It was founded by Louis XIV. 1671, and during his reign, and for a long time afterward, was a place of retirement for the aged servants of court favorites as well as for invalided soldiers; but this abuse was ended by St. Germain in Louis XV.'s reign. With its high gilded dome, under which are the tombs of Napoleon, Turenne, Vauban, Jerome and Joseph Bonaparte and Marshal MacMahon, it is one of the most conspicuous monuments of Paris. The buildings, which cover about 30 acres, were begun in 1671, and completed in 1675. They furnish accommodation for 6,000 inmates. The façade of this vast structure is 660 feet in length. It stands about 600 yards back from the Seine, facing the Esplanade des Invalides, a fine open place about 900 feet wide, containing several rows of trees and extending to the river opposite Champs Elysées. In 1789 the Hôtel had a revenue of abt. $330,000; but during the Republic its property was alienated, and the institution supported from the public revenue.

INVALUABLE, a. *ĭn-văl'ū-ă-bl* [*in*, intensive, and *valuable*]: precious above estimation; incapable of being valued.

INVARIANTS, in Algebra and Geometry: when a geometric figure is projected from a central point from one plane into another, some of its properties generally remain unaltered. The figure is defined in analytic geometry by equations between the point coordinates, and its properties are expressed by equations between the coefficients. When the property of the figure is unaltered by projection, the corresponding expressions in the coefficients must also be unaltered or merely multiplied by some number. Such expressions are called Invariants. A projection is defined analytically by linear equations (i.e., equations of the first degree) between the new and the old coordinates; it is therefore, analytically, a linear transformation. An invariant of a set of equations is therefore a function of their coefficients which is merely multiplied by a number when the variables undergo linear transformation. Thus if in the expression $ax^2+2bxy+cy^2$ we put $x = a_1x' + a_2y'$, $y = b_1x' + b_2y'$ and denote the resulting expression by $a'x'^2 + 2b'x'y'$, $+c'y'^2$, it is found that

$a'c' - b'^2 = (a_1b_2 - a_2b_1)^2\ (ac - b^2)$. The quantity $ac - b^2$ is therefore an invariant under the above definition. When $ac - b^2 = 0$, $ax^2 + 2bxy + cy^2$ is a perfect square; and the same is then true of $a'x'^2 + 2b'x'y' + c'y'^2$.

There are also expressions involving not only the coefficients $a$, $b$, $c$, . . . but also the variables $x$, $y$, . . . which have the invariant property. These are called *covariants*. They represent geometric figures whose relation to the given figure is unaltered by projection. The subject of invariants is of great importance in projective geometry. Among its founders were Cayley and Sylvester.

INVASION, the entry into a country by a public enemy. As early as 1795 Congress provided by law for the protection against the invasion of the United States by any foreign nation or Indian tribe. The act made it lawful whenever there should be an invasion, or imminent danger of one, for the President to call out such number of the militia of the State or States convenient to the place of invasion as he might think necessary to repel it. This, strengthened in some respects by amendments, has been in force ever since. An invasion has usually all the elements of war, and the invaders may be dealt with as persons at war with the country invaded, in accordance with usages of warfare without the declaration of war by Congress. The Supreme Court of the United States has decided that a State is invaded when there is a domestic rebellion within its territory, and that the same rules of law may be enforced as in the case of an invasion by external foes. This decision practically abolishes all distinction between invasion and insurrection, and the same rules which furnish a remedy for invasion can be applied in the suppression of an insurrection or local rebellion. In case the State militia is not sufficiently strong, or not easily available, the standing troops of the United States may be ordered out by the President, if indeed it be necessary to call upon the State troops before resorting to the regular troops of the United States. It is not necessary that actual armed violence shall be resorted to in order to constitute insurrection. Any combination of persons too powerful to be suppressed by the ordinary course of judicial proceedings is tantamount to insurrection, and warrants the use of the effective measures provided for by law for its suppression.

As regards the rights of the invader many rules have been laid down, carefully distinguishing between invasion and conquest, especially with respect to private and public property. It is now held that public money, military stores, and public buildings with their contents are lawful sources of plunder, and telegraph and railway property may be used as needs require. The unwarranted burning of the capitol and other public buildings in Washington by the British in 1814; the removal of the

Palatine libraries during the Thirty Years' War; the confiscation of the astronomical instruments in the Observatory of Peking by the Germans during the operations of the Allies against the Chinese capital—all these were in direct violation of the accepted rules of invasion. The levying of supplies, labor, forage, transportation facilities, etc., upon the native people is strictly within the lawful confines of invasion; for example, during the wars of Frederick the Great, both the Austrians and the Prussians were mainly supported by these enforced contributions of supplies. Napoleon was probably the greatest exponent of the belief that a war should support itself, either during the conflict, or by imposing a large indemnity or boun; hence we see that he exacted of Prussia, after the battle of Jena, more than a hundred million francs, and Spain was also forced during the Peninsular War to pay a similar amount. The pillage of private property is strictly prohibited, but should the owners give aid to their country, the property may be sold at the discretion of the invading general.

INVECTIVE, n. *ĭn-vĕk'tĭv* [F. *invective*, an invective —from mid. L. *invectīvus:* L. *invectus*, conveyed or brought into; assaulted—from *in*, into; *vĕhō*, I carry: Sp. *invectiva*, invective]: a speech or expression intended to cast opprobrium, censure, or reproach on another; unfriendly censure: ADJ. abusive; satirical. INVEC'TIVELY, ad. *-lĭ*.—SYN. of 'invective': abuse; reproach; censure; accusation; opprobrium.

INVEIGH, v. *ĭn-vā'* [L. *inve'hĕrĕ*, to carry into or against—from *in*, into; *vĕhō*, I carry or convey (see INVECTIVE)]: to exclaim or rail against; to utter censure or reproach against; to attack with reproaching words. INVEIGH'ING, imp. INVEIGHED', pp. *-vād'*.

INVEIGLE, n. *ĭn-vē'gl* [Norm. F. *enveogler;* OF. *aveugler*, to blind, to hoodwink—from mid. L. *abŏc'ŭlis*, blind—from L. *ab*, from; *ocŭlŭs*, the eye or sight: It. *invogliare*, to make one willing or desirous]: to entice; to seduce; to wheedle—used only in a bad sense. INVEIGLING, imp. *ĭn-vē'glĭng:* ADJ. enticing to anything bad. INVEI'GLED, pp. *-gld*. INVEI'GLER, n. *-gler*, one who. INVEI'GLEMENT, n. *-gl-mĕnt*, seduction or enticement to evil or danger.

INVENT, v. *ĭn-vĕnt'* [F. *inventer*—from mid. L. *inventārĕ*—from L. *inventus*, lighted upon, found out—from *in*, on; *venīrĕ*, to come, to chance: It. *inventare—lit.*, to light upon, to discover]: to find out a new thing; to devise or contrive something not before known; to contrive falsely; to forge or fabricate: in *OE.*, to light on; to meet with. INVENT'ING, imp. INVENT'ED, pp. INVEN'TOR, n. a discoverer or maker of something new. INVEN'TION, n. *-shŭn* [F.—L.]: the act or operation of finding out or contriving something new; the article invented (see PATENT): forgery; fiction; in the *fine arts*, a term em-

ployed to designate the conception or representation of a subject, and generally the whole means by which the artist seeks to portray his thoughts; in *OE.*, a discovery; a device. INVEN'TIVE, a. *-tĭv* [F. *inventif*]: quick at contriving; ready in expedients. INVEN'TIVELY, ad. *-lĭ.* INVEN'TIVENESS, n. *-nĕs,* the faculty of inventing. INVENTION OF THE CROSS [OE. *invention,* discovery]: in *R. Cath. Chh.,* a festival held in honor of the supposed finding of the true cross on which Christ was crucified, by the Empress Helena A.D. 316, on Mount Calvary, celebrated on 3d May. *Note.—Discovery* implies observation directed to find out the properties or qualities of a thing existent but unknown, as the properties of the magnet were *discovered;* while *invention* implies the construction or fabrication of a thing formerly non-existent, as the steam-engine was *invented.*—SYN. of 'invent': to find out; contrive; design; devise; frame; discover; excogitate; forge; fabricate; feign; imagine.

INVENTORY, n. *ĭn'vĕn-tō-rĭ* [mid. L. *inventarium*—from L. *inventus,* past part. *of invenio*—from *in,* on; *venire,* to come to chance]: detailed account, catalogue, or schedule of a set, group, or collection of objects, as of articles of merchandise, furniture, etc.

INVER-, prefix, *ĭn-vĕr-* [Gael.]: a confluence of rivers. It is used largely as an element in place names in Scotland, as Inverness, Inverary, etc.

INVERMINATION, n. *ĭn-vĕr'mĭ-nā'shŭn* [L. *in,* in; *vermĭnātĭōnĕm,* the having worms—from *vermĭnārĕ,* to be troubled with worms]: a diseased state of the bowels caused by worms.

INVERNESS, *ĭn-vĕr-nĕs':* royal, parliamentary, and municipal burgh, cap. of the co. of Inverness, and chief town of the Highlands of Scotland; at the mouth, and mostly on the right bank, of the river Ness. It is on the Highland railway, 109 m. w.n.w. from Aberdeen. Its environs, well cultivated and beautifully wooded, are almost surrounded by mountains and hills of various heights, forming a picturesque and interesting landscape. Inverness is a very ancient town, and was one of the Pictish capitals; yet it has quite a modern appearance with wide streets, beautiful suburbs, and fine villas. The first charters of Inverness as a burgh were granted by King William the Lion (1165–1214). By one of these, it is stipulated that when the King has made a ditch around the burgh, the burgesses shall make a palisade on the edge of the ditch, and keep it in good repair forever. In 1411, the town was burned by Donald, Lord of the Isles, on his way to the battle of Harlaw (q.v.). The Castlehill, on the s. side of the town, part of an old sea-terrace, was the site of a castle, which, 1303, was taken by the adherents of King Edward I. of England; but subsequently retaken by those of King Robert Bruce. King James Inverness is said to have held a parliament

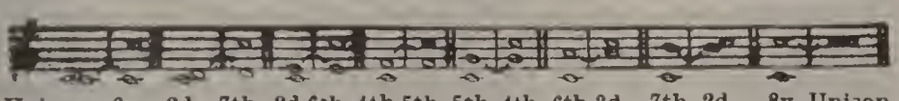
in the castle 1427. An iron suspension bridge, constructed 1855, connects the two parts of the town. In the High Street stands the town-cross, and beside it the famous Clach-na-cuddin, a lozenge-shaped blue slab, formerly regarded as the palladium of the burgh. In the same street, are the Town-hall and Exchange, built 1708. Of the old religious foundations of Inverness, there is little more than tradition. The Dominicans seem to have had a monastary, founded by King Alexander II., 1233. The Franciscans also are believed to have had a convent in the town. Among more modern buildings and foundations, are Raining's School, established 1747; the spire of the old jail, 150 ft. high, built 1791; curiously twisted by the earthquake of 1816, and since readjusted; the Royal Academy, 1792; the County Buildings and jail, on the site of the castle, 1835; St. Andrew's Cathedral, a fine Gothic building, the foundation-stone of which was laid 1866; and a new town hall, opened 1882. There is a small woolen manufactory, a Workmen's Club and library, several printing establishments, newspapers, and several banking-offices. It has three harbors, built at different times, and a considerable amount of shipping by the Moray Firth and the Caledonian Canal, which connects it with the w. coast. Pop. (1901) 21,193.

INVERNESS-SHIRE, *ĭn-vĕr-nĕs'sher:* largest county of Scotland, includes Badenoch, Glenroy, and the valley of the Spey on the e.; Lochaber on the s.; Glenelg, Glen Garry, Arisaig, Moydart, and Frazers' County on the w.; Glen Urquhart and Glen Morriston toward the centre. It includes also Strathglass on the n.; and several of the western islands, viz., Skye, Harris, North and South Uist, and Barra, etc. The mainland portion lies between n. lat. 56° 49′ and 57° 36′, and w. long. 3° 30′ and 5° 55′; and is bounded e. by the counties of Aberdeen, Banff, Elgin, and Nairn; s. by Perth and Argyleshire; w. by the Atlantic and Ross-shire; n. by Ross-shire. It measures n.e. to s.w. 85 m., and from n.w. to s.e. 57 m.; 4,256 sq. m., of which more than two-thirds consist of barren heath. The wildest and most mountainous portion is toward the w. comprising a tract 70 m. in extent, designated the *Rough Bounds.* The most extensive moss in Great Britain lies on the s. of Badenoch, where, in the naturally formed wooded islands, large herds of deer find a refuge. These mosses were at one time mostly, if not wholly, covered with trees, some of great magnitude. In Strathspey, three tiers of stocks, one above another, have been found, showing that a succession of forest trees must have grown up, flourished for ages, and then, one after another, disappeared by the work of time or the axe. At present, the natural pines occupy a larger space than in any other county of Britain. There are also many thousand acres of ordinary forest trees. Some mountains attain considerable height. Ben Nevis, now ascertained to be the highest in Great Britain, is 4,406 ft. above sea-

level. Cairngorm, partly in this county, is 4,084 ft. high. The geological formation is various; but primary rocks consisting of gneiss, mica-slate, granite, porphyry, and trap rocks, prevail. The most fertile soil of the county rests on the red sandstone in the valley of the Aird, and between the county town and Beauly. There are several lakes of some extent, as Loch Ness, Loch Lochy, Lock Laggan, Loch Ericht, and a number of other lochs forming arms of the sea. The principal rivers are the Spey, Lochy, Beauly, Findhorn, Nairn, Ness, Garry, Morriston, and the Foyers (q.v.). The county is divided among 80 or 90 proprietors, a few of whom possess above 100,000 acres. There are comparatively few antiquities in the county. These consist principally of remains of vitrified forts and ruins of old castles. The battle which decided the fate of the Stuarts was fought 1746, Apr. 16, on Culloden Moor, a few miles from Inverness. The Gaelic language is still generally, but in scarcely any district exclusively, spoken. The constituency returns one member to parliament. Pop. (1901) 90,104.

INVERSE, a. *ĭn-vĕrs'* or *ĭn'vĕrs* [F. *ĭnverse*—from L. *inversus*, turned bottom upwards—from *in*, in; *verto*, I turn: Sp. *inverso* (see INVERT)]: placed in contrary order; opposed to *direct;* in *bot.*, having a position or mode of attachment the reverse of what is usual. INVERSE'LY, ad. *-lĭ*, in an inverted order or manner. INVER'SION, n. *-shŭn* [F.—L.]: change of order, so that the last becomes first and the first last; a contrary change of order or position; said of an organ which is completely or partially turned inside out, as the womb. INVERSE RATIO, in *arith.* and *alg.*, a ratio when the relation of numbers to each other is reversed. Thus the intensity of light is said to be in inverse ratio to the square of the distance—the greater the distance, the less the intensity.

INVERSION, in Music: transposing of one of the two notes of an interval by an octave upward or downward, to a position the reverse of that which it before occupied with respect to the other note; so that if the transposed note was the lower note of the two, it shall now be the higher one, and *vice versâ*. The new interval thus formed takes its name from the complement of the octave; e.g., a unison inverted becomes an octave, a second becomes a seventh, a third becomes a sixth, a fourth becomes a fifth, a fifth becomes a fourth, a sixth becomes a third, a seventh becomes a second, and an octave becomes a unison. The following shows how these arise:



Unison. 8v. 2d. 7th. 3d.6th. 4th.5th. 5th. 4th. 6th.3d. 7th. 2d. 8v. Unison.

By inversion diminished intervals become augmented, and augmented become diminished; major becomes minor,

and minor become major, but perfect intervals are perfect also when inverted. For inversion of chords see CHORD. —An important use is made of the word inversion also in reference to a whole passage or phrase: see COUNTERPOINT.

INVERSION, GEOMETRIC: a figure being given either in a plane or in space every point $P$ of it is joined to a fixed center $O$, and a new point $P'$ laid off on $OP$ such that $OP \cdot OP' = a^2$, where $a$ is a fixed length. The points $P'$ are said to be inverse to the points $P$, and the figure made up of the points $P'$ is inverse to that of the points $P$. The sphere of radius $a$ and center at $O$ remains fixed, point for point; hence the inversion is said to be with respect to this sphere. Every sphere becomes a sphere, unless it passes through $O$ in which case it becomes a plane. Every circle becomes a circle, except that the circles through $O$ become straight lines A remarkable property of geometric inversion is that every angle of the original figure becomes an equal and opposite angle in the new figure. The construction is employed in Peaucellier's *Inversor*, a piece of mechanism invented for the purpose of converting rectilinear into circular motion, in connection with the steam engine. It has many beautiful geometric applications. If the sphere of inversion becomes a plane, geometric inversion becomes simply reflection as in a mirror.

INVERT, v. *ĭn-vĕrt'* [L. *inver'tĕrĕ*, to turn bottom upward—from *in*, in; *verto*, I turn or change: Sp. *invertir:* It. *invertere*]: to turn upside down; to place in a contrary position, direction, or order. INVERT'ING, imp. INVERT'ED, pp.: ADJ. turned to a contrary direction; changed in order; in *bot.*, having the radicle of the embryo pointing to the end of the seed opposite the hilum; having the ovules attached to the top of the ovary. INVERT'EDLY, ad. *-lĭ*. INVERTED ARCH, an arch of stone or brick with the crown downward—usually employed in the construction of tunnels.

INVERTEBRATE, a. *ĭn-vĕr'tĕ-brāt* [L. *in*, not; *vertĕbra*, a joint in the backbone: F. *invertébré*, invertebrate]: without a vertebral column or spinal bone; destitute of a backbone: N. an animal having no spinal bone. INVER'TEBRA'TA, n. plu. *-brā'tă*, or INVERTEBRATE ANIMALS, one of the great divisions of the animal kingdom, in which the animals are destitute of vertebræ or backbones. The division of animals into *Vertebrate* and *Invertebrate* is natural and unavoidable, acknowledged in all systems of zoology. But these groups being formed, the one on a positive, and the other on a negative character, are not of equal value in the classification of the animal kingdom. In Cuvier's system the invertebrate animals form three of the great divisions of the animal kingdom—viz., *Mollusca*, *Articulata*, and *Radiata*, each of which, like *Vertebrata*, exhibits a pecul-

lar type of structure. More recent classifications distribute invertebrates into a larger number of separate divisions; see ZOOLOGY, where the groups are *Protozoa, Porifera, Cœlenterata, Vermes, Arthropoda, Echinodermata, Mollusca, Tunicata.* Among the lower invertebrates more than among the vertebrate animals, the arrangement into groups must be regarded as at present, largely tentative and provisional; though in the higher departments of invertebrate zoology many of the classes and other groups are very well defined. The organization of some of them, as insects, however different from that of vetebrate animals, is not evidently lower, but exhibits a perfection as admirable as in any of them, while all vital powers are most fully displayed. IN-VER'TEBRAL, a. sometimes used for INVERTEBRATE.

INVERTED CYLINDER ENGINE: a vertical engine in which the cylinder is inverted or placed above the piston rod, connecting rod, and crank-shaft. It is typical of the marine engines employed to drive screw propellers.

INVERTIN, n. *ĭn-vĕrt'ĭn:* in *chem.*, the active principle of the yeast plant, obtained by repeatedly washing yeast first with water and then with alcohol. Invertin has the power of inverting cane sugar, but has no action on maltose.

INVEST, v. *ĭn-vĕst'* [F. *investir*—from L. *investīrĕ*, to cover with a garment—from *in*, on; *vestis*, a garment: It. *investire*]: to clothe; to dress; to put garments on; to place in possession of office, rank, or dignity; to inclose or surround, as a city besieged by an enemy; to place or lay out money. INVEST'ING, imp. INVEST'ED, pp. INVEST'IVE, a. *-ĭv*, clothing; inclosing. INVEST'MENT, n. that in which anything is invested, as money; the act of placing out money to interest or profit in the public funds, in the purchase of shares or property, and the like; the act of surrounding a town, etc., in order to besiege it.—SYN. of 'invest': to adorn; grace; confer; give; endow; inclose; surround; put on; array; bedeck.

INVESTIGATE, v. *ĭn-vĕs'tĭ-gāt* [L. *investīgātus*, tracked out, searched or sought after—from *in*, into; *vestīgō*, I follow a track; *vestīgĭŭm*, a track or footstep]: to search, trace, or find out; to examine into with care and accuracy. INVES'TIGATING, imp. INVES'TIGATED, pp. INVES'TIGATOR, n. *-gā-tĕr* [F. *investigateur*]: an examiner; one charged to look into anything. INVES'TIGABLE, a. *-gă-bl*, that may be searched out. INVES'TIGA'TION, n. *-gā'shŭn* [F.—L.]: the action or process of searching carefully for truth, facts, or principles; careful inquiry to find out what is unknown; a searching inquiry. INVES'TIGATIVE, a. *-gā'-tĭv*, careful in research. INVES'TIGA'TORY, a. *-tĕr-ĭ*, searching; inquiring into.

INVESTITURE, n. *ĭn-vĕs'tĭ-tūr* [F. *investiture*—from

mid. L. *investitūrā*, investiture—from L. *in*, on; *vestis*, a garment (see INVEST)]: the act or right of giving legal possession; formerly, in Scotch law, act of giving feudal possession of heritable property; in feudal and ecclesiastical history, the act of giving corporal possession of a manor, office, or benefice, accompanied by a certain ceremonial, such as the delivery of a branch, a banner, or an instrument of office, designed to signify the power or authority which it is supposed to convey.

The contest about ecclesiastical investitures is so interwoven with the whole course of mediæval history, that a brief account of its origin and nature is indispensable to understanding many of the most important events of that period. The system of feudal tenure had become so universal that it effected even the land held by ecclesiastics, and attached to most of the higher ecclesiastical dignities, monastic as well as secular. Accordingly, ecclesiastics who, in virtue of the ecclesiastical office which they held, came into possession of the lands attached to such offices, began to be regarded as becoming by the very fact feudatory to the suzerain of these lands; and, as a natural result, the suzerains thought themselves entitled to claim, in reference to these personages, the same rights which they held over the other feudatories of their domains. Among these rights was that of granting solemn investiture. Now, in the case of bishops, abbots, and other church dignitaries, the form of investiture consisted in the delivery of a pastoral staff or crosier, and the placing a ring upon the finger; and as these badges of office were emblematic —one of the spiritual care of souls, the other of the espousals, as it were, between the pastor and his church or monastery—the assumption of this right by the lay suzerains became a subject of constant and angry complaint on the part of the church. On the part of the suzerains it was replied, that they did not claim to grant by this rite the spiritual powers of the office, their function being solely to grant possession of its temporalities, and of the temporal rank thereto annexed. But the church party urged, that the ceremonial in itself involved the granting of spiritual powers; insomuch that in order to prevent the clergy from electing to a see when vacant, it was the practice of the emperors to take possession of the crosier and ring, until it should be their own pleasure to grant investiture to their favorites. The disfavor in which the practice had long been held found its most energetic expression in the person of Gregory VII., who having, 1074, enacted most stringent measures for repression of simony, proceeded, 1075, to condemn, under excommunication, the practice of investiture as almost necessarily connected with simony, or leading to it. This prohibition, however, as is observed by Mosheim (ii. 326), regarded investiture only in the objectionable form in which it was then

practiced, or investiture of whatever form, when the office had been obtained simoniacally. But a pope of the same century, Urban II., went further, and (1095) entirely forbade not only lay investiture, but the taking of an oath of fealty to a lay suzerain by an ecclesiastic, even though holding under him by the ordinary feudal tenure. The contest continued during the most of the 11th c. In the beginning of the 12th c., it assumed a new form, the pope, Pascal II., having actually agreed to surrender all the possessions and royalties with which the church had been endowed, and which alone formed the pretext of the claim to investiture on the part of the emperor, on condition of the emperor (Henry V.) giving up that claim to investiture. This treaty, however, never had any practical effect; nor was the contest finally adjusted until the celebrated concordat of Worms 1122, in which the emperor agreed to give up the form of investiture *with the ring and pastoral staff*, to grant to the clergy the right of free elections, and to restore all the possessions of the Church of Rome which had been seized either by himself or by his father; while the pope, on his part, consented that the elections should be held in the presence of the emperor or his official, but with a right of appeal to the provincial synod; that investiture might be given by the emperor, but only *by the touch of the sceptre;* and that the bishops and other church dignitaries should faithfully discharge all the feudal duties which belonged to their principality.

Such was the compact entered into between the contending parties, and for a time it had considerable effect in restraining one class of abuses; but it went only a little way toward eradicating the real evil of simony and corrupt promotion of unworthy candidates for church dignities. Still the principle on which the opposition to investiture was founded was almost a necessary part of the mediæval system, and Mosheim (ii. 327) regards it as 'perfectly accordant with the religious principles of the age.' It was, in fact, but one of the many forms in which the spirit of churchmanship has arrayed itself, whether in ancient or modern times, against what are called the Erastian tendencies which never fail to develop themselves under the shadow of a state church, no matter what may be its creed or its constitution.

INVESTMENT, n. See under INVEST.

INVETERATE, a. *ĭn-vĕt'ĕr-āt* [L. *invetĕrātŭs*, kept till old or stale—from *in*, into; *vetus*, or *vĕtĕrem*, old: It. *inveterato*, inveterate: F. *invétérer*, to become inveterate]: deep seated or rooted; obstinate; obstinate from long continuance. INVET'ERATELY, ad. *-lĭ*. INVET'ERACY, n. *-ĕr-ă-sĭ*, long continuance of anything bad; state of being deep rooted and firm by time. INVET'ERATENESS, n. long continuance of anything bad.

INVIDIOUS, a. *ĭn-vĭd'ĭ-ŭs*, [L. *invĭdĭōsŭs*, full of envy or spite—from *invĭdĭă*, envy: It. *invidioso*]: likely to

incur or provoke ill-will, envy, or hatred. INVID'IOUSLY, ad. *-lĭ*. INVID'IOUSNESS, n. *-nĕs*, the quality of provoking envy or hatred.—SYN. of 'invidious': envious; jealous; suspicious; malignant; hateful.

INVIGORATE, v. *ĭn-vĭg'ŏ-rāt* [mid. L. *invĭgŏrātus*, strengthened: It. *invigorire*, to strengthen—from L. *in*, in; *vigor*, strength]: to strengthen; to give vigor to; to animate; to enliven; in *OE.*, to enforce. INVIG'ORATING, imp. INVIG'ORATED, pp.: ADJ. strengthened. INVIG'ORA'TION, n. *-rā'shŭn*, the act of invigorating; the state of being strengthened.

INVINCIBLE, a. *ĭn-vĭn'sĭ-bl* [F. *invincible*—from mid. L. *invincĭb'ĭlĭs;* It. *invincibile*, unconquerable—from L. *in*, not; *vinco*, I conquer]: that cannot be conquered or subdued; not to be overcome. INVINCIBLES, Irish secret society, not identical with, though it developed from that of the Fenians, in or prior to 1882. INVIN'CIBLY, ad. *-blĭ*. INVIN'CIBLENESS, n. *-bl-nĕs*, or INVIN'CIBIL'ITY, n. *-bĭl'ĭ-tĭ*, the quality of being unconquerable.

INVIOLABLE, a. *ĭn-vī'ō-lă-bl* [F. *inviolable*—from L. *inviŏlābĭlĭs*, not to be hurt: It. *inviolabile*—from L. *in*, not; *viŏlō*, I defile, I injure]: not to be profaned or polluted; that ought not to be injured; not to be broken. INVI'OLABIL'ITY, n. *-bĭl'ĭ-tĭ* [F. *inviolabilité*]: the state or quality of being inviolable. INVI'OLABLY, ad. *-blĭ*. INVI'OLATE, a. *-ō-lāt* [L. *inviŏlātŭs*, uninjured]: uninjured; unprofaned; unbroken; unpolluted.

INVIRILITY, n. *ĭn'vĭ-rĭl'ĭ-tĭ* [see VIRILE]: absence of manhood or manly character; effeminacy.

INVISIBLE, a. *ĭn-vĭz'ĭ-bl* [F. *invisible*—from L. *invīsĭb'ĭlĭs*, hidden from sight—from *in*, not; *vĭdĕō*, I see]: that cannot be seen; not perceptible by sight. INVIS'IBLY, ad. *-blĭ*. INVIS'IBIL'ITY, n. *-bĭl'ĭ-tĭ*, or INVIS'IBLE'NESS, n. *-bl-nĕs*, state of being invisible.

INVITE, v. *ĭn-vīt'* [F. *inviter*—from L. *invītārĕ*, to ask or request]: to ask to come into or to some place; to request the company of; to ask to do something; to present opportunities; to solicit; to allure; to persuade. INVI'TING, imp.: ADJ. enticing; alluring; tempting. INVI'TED, pp. solicited; allured. INVI'TER, n. one who. INVI'TINGLY, ad. *-lĭ*. INVITATION, n. *ĭn'vĭ-tā'shŭn* [F.—L.]: the act of asking to do some act, or to go to some place. INVITATORY, a. *ĭn-vī'tă-tĕr-ĭ*, using or containing invitation: N. a psalm or hymn inviting to prayer.—SYN. of 'invite': to summon; call; bid; solicit; ask; entice; attract.

INVOCA'TION OF ANGELS AND SAINTS: act of addressing prayers to the blessed spirits who are with God, whether the angels or the souls of the just who have been admitted to the happiness of heaven. The practice of addressing prayers to angels, especially to the angel-guardian, to the Virgin Mary, and to other saints, prevails in the Roman, the Greek, the Russo-Greek, and the

eastern churches of all the various rites. In the Christian religion, the principle of the unity of God excludes all idea of subordinate deities such as are found in paganism; and all alike, Rom. Catholics as well as Protestants, agree that its very first principles exclude the idea of rendering divine worship, no matter how it may be modified, to any other than the One Infinite Being. But while Protestants carry this principle so far as to exclude every species of religious worship and every form of invocation addressed to angels or saints, as trenching upon God's honor, and irreconcilable with the Scriptures, which hold Him forth as the sole object of worship and the only fountain of mercy, the Rom. Cath. doctrine permits and sanctions a worship (called *douleia*) of the saints, inferior to the supreme worship (*latreia*) offered to God, and an invocation of the saints, not for the purpose of obtaining mercy or grace from themselves directly, but in order to ask their prayers or intercession with God on our behalf. For this doctrine and the analogous practice, they do not advance the direct authority of Scripture (except a few passages which seem to them to imply the intercommunion of the two worlds, as Matt. xiii. 3; Luke xiv. 17; Exod. xxxii. 13), but rely on what to them is equally decisive testimony, viz., the unwritten word of God conveyed by tradition. Origen (Opp. ii. p. 273) speaks of the belief that 'the saints assist us by their prayers' as a doctrine 'doubted by no one.' St. Cyprian, addressing the confessors going to martyrdom, engages by anticipation their prayers in his behalf when they shall have received their heavenly crown (Ep. 60, Dodwell's edition). To the same effect are cited the testimonies of Basil (Opp. ii. 155), Gregory Nazianzen (Opp. i. 288), Gregory of Nyssa (ii. 1017), Ambrose (ii. 200), Chrysostom (iv. 449), and many other Fathers, as well as the liturgies of the various ancient churches, whether of the Roman, the Greek, the Syrian, or the Egyptian rite.

On the other hand, Prot. historians, even admitting the full force of these testimonies to the existence of the practice, allege that the practice is an early, but unscriptural addition, dating only from the infusion into the church system of Alexandrian Neo-platonism and Oriental Magianism, which they believe to have left traces even in the so-called orthodox Christianity of the fourth and fifth c. But leaving aside the doctrinal controversy, the fact at least is certain, that in the fourth, and still more in the fifth and following c. the usage was universal; and a curious evidence of its prevalence is furnished by the fact, that the very excess to which it was carried was condemned as a heresy (that of the Collyridians) by those who themselves confessed the lawfulness of the practice when confined within legitimate limits. That similar excesses in the

practice, and similar abuses as to the nature and limits of the legitimate invocation of the saints continued through the mediæval period, Rom. Catholics themselves admit, though they allege that such abuses were at all times reprobated by the authentic teaching of the church; and the multiplied devotions to the saints, especially to the Blessed Virgin, the efficacy claimed for them and the extraordinary legends connected with them, and the prominence which the worship had assumed in the church, were among the most fertile themes of invective with the first Reformers. The Council of Trent (25th Sess., *On the Invocation of Saints*) defines very precisely what is the doctrine of the Rom. Cath. Church on this subject. It declares 'that the saints who reign with God offer up their prayers to God for men; that it is good and useful suppliantly to invoke them, and to resort to their prayers, aid, and help, for the purpose of obtaining benefits of God through his son Jesus Christ our Lord who alone is our Redeemer and Savior.' From this decree it is inferred that the Rom. Cath. doctrine on the saints does not prescribe the practice of invoking them as necessary or essential, but only as 'good and useful,' and that what is to be asked of them is not the direct bestowal of grace and mercy, as from themselves, but only their prayers, their assistance, and their help in obtaining benefits from God; and though many forms of prayer in use in the Roman Church bear, especially to a Prot. reader, all the appearance of direct appeals to the saints themselves for the benefits which are implored, yet all Rom. Cath. authorities are unanimous in declaring that these forms of words are to be interpreted, and that, from habitual use, they are so interpreted, even by the most superficially instructed Rom. Catholics, with the understood explanation, that all the power of the saints to assist us consists exclusively in their prayers for us, and seconding our prayers by their own. See Bellarmine, *Controversiæ de Sanctorum Beatitudine*, lib. i. cap. xvii.

Protestants object to the invocation of saints and of angels, that it is without evidence of divine authority, contrary to the whole tenor of Scripture, and derogatory to the mediatorship of Christ. They deny that —even if that part of the Roman doctrine be granted which asserts that the prayers *of* departed saints are efficacious for us with God—there is in that fact any bearing on the question of prayers *to* those saints. They ask what reason can be adduced for believing that prayers addressed to saints are even *heard* by them, or that they, not being omnipresent or omniscient, have always a knowledge of the worship addressed to them? They further deny that the prayers addressed to saints —and particularly to the Virgin Mary—are always capable of explanation as merely an asking of their prayers on behalf of those who invoke them, and quote many instances in proof.

INVOICE, n. *ĭn'voys* [It. *avviso*, notice, information: said also to be from *envois*, an OE. plu. of F. *envoi*, OF. *envoy*, a sending, a consignment]: written and priced list or detailed account of goods sent by a merchant to a customer—the invoice being sent with the goods or separately: a bill of parcels: V. to make a written list of goods or property, with their prices, to be forwarded to a purchaser. IN'VOICING, imp. IN'VOICED, pp. *-voyst*. INVOICE-BOOK, the book into which bills and invoices are copied, or into which the originals are pasted.

INVOKE, v. *ĭn-vōk'* [F. *invoquer*, to invoke—from L. *invŏcō*, I call on or upon—from *in*, on; *vŏcō*, I call]: to address in prayer; to call for help with earnestness. INVO'KING, imp. INVOKED', pp. *-vōkt'*. INVOCATION, n.

INVOLUCELS, n. *ĭn-vŏl'ū-sĕls* [F. *involucelle*, an involucel; L. *invŏlūcrum*, a wrapper]: in *bot.*, the collection of bractlets surrounding a secondary or partial umbel or flower-head; secondary involucres.

INVOLUCRE, n. *ĭn'vō-lō'kr*, or IN'VOLU'CRUM, n. *-krŭm* [F. *involucré*—from L. *invŏlūcrum*, a wrapper—from *in*, into; *volo*, I roll: It. *involucro*]: in *bot.*, group of bracts surrounding flowers in their unexpanded state, and occupying a place on the floral axis beneath them after their expansion. The bracts which form an involucre are generally grouped in a whorl. The layer of epidermis covering the spore cases in ferns is called an involucre. In umbelliferous flowers, there is very commonly an involucre, not only to the umbel, but to each division of the umbel, or *umbellule*. The former is called the *general involucre*, or simply the *involucre;* the latter are *partial involucres*, or *involucels*. The cup of the acorn, hazel, chestnut, etc., may be regarded as an involucre. IN'VOLU'CRAL, a. *-lō'krăl*, belonging to the involucre. INVOLU'CRED, a. *-lō'krd*, having an involucre.

INVOLUNTARY, a. *ĭn-vŏl'ŭn-tĕr-ĭ* [mid. L. *invŏluntārĭŭs: in*, not, and Eng. *voluntary*]: not having will or choice; not proceeding from will or choice. INVOL'UNTAR'ILY, ad. *-tĕr'ĭ-lĭ*. INVOL'UNTAR'INESS, n.

INVOLUTE, n. *ĭn'vō-lōt* [L. *invŏlūtŭs*, inwrapped, inclosed—from *in*, into; *volvo*, I roll: It. *involuto*, enveloped: F. *involuté*, curling inside]: in *geom.*, the curve traced by any point of a string, when unwrapped under tension from a given curve. IN'VOLUTE, a., or IN'VOLU'TED, a. in *bot.*, rolled spirally inward, as leaves. IN'VOLU'TION, n. *-lō'shŭn* [F.—L.]: the action of folding or rolling in; that which is wrapped round anything; in *arith.* and *alg.*, the raising of a number or quantity to any given power, as if it were folded or rolled on itself: the return of an organ or tissue to its original state, as the womb after expelling the child. IN'VOLU'TIVE, a. *-lō'tĭv*, in *bot.*, applied to leaves rolled inward spirally on each side; involute.

INVOLUTE, in Geometry. See EVOLUTE.

INVOLUTION, in Mathematics. See EVOLUTION.

INVOLVE, v. *ĭn-vŏlv'* [L. *involvĕrĕ*, to surround, to inwrap—from *in*, in or on; *volvo*, I roll: It. *involvere:* F. *involver*]: *literally*, to surround or inwrap; to comprise; to take in; to implicate; to imply; to entangle; to plunge or overwhelm in, as debt; to embarrass; to raise a number or quantity to any given power. INVOLV'ING, imp. INVOLVED', pp. *-vŏlvd'*. INVOLVE'MENT, n. *-vŏlv'mĕnt*, state of being involved.—SYN. of 'involve': to inwrap; cover; entwist; join; catch; conjoin; complicate; blend; mingle; embarrass; overwhelm.

INVULNERABLE, a. *ĭn-vŭl'nėr-ă-bl* [F. *invulnérable*—from L. *invul'nĕrābĭlĭs*, not to be wounded—from *in*, not; *vulnĕrō*, I wound]: that cannot be wounded or maimed; that cannot be pierced or injured. INVUL'NERABLENESS, n. *-bl-nĕs*, or INVUL'NERABIL'ITY, n. *-bĭl'ĭ-tĭ*, security from wounds or injury.

INWARD, a. *ĭn-wėrd* [AS. *inneweard*, inward—from *inne*, within; *weard*, toward]: internal; placed or being within; domestic; familiar: in *OE.*, seated in the mind. IN'WARD, or IN'WARDS, ad. *-wėrdz*, toward the inside or centre; in the mind or thoughts. IN'WARDLY, ad. *-lĭ*, in the inner parts; in the heart or thoughts. IN'WARDS, n. plu. *-wėrdz* [AS. *inneweardе*, the bowels]: the bowels; the viscera; in *OE.*, for INWARD.

INWEAVE, v. *ĭn-wēv'* [*in*, into and *weave*]: to intermix or intertwine; to weave together. INWEAV'ING, imp. INWOVE', pt. *-wōv'* INWO'VEN, pp. *-wō'vn*.

INWROUGHT, pp. and a. *ĭn-rawt'* [*in*, into, and *wrought*]: worked in or among other things; adorned with figured work.

IO! int. *ī'ō* [Gr. *io*]: an exclamation of joy or triumph.

IO. See PLANETOIDS.

IO, n. *ī'ō:* one of the satellites of Jupiter.

IO, *ī'ō* in Greek mythology, daughter of Inachus, Jasus, or Pirenes (according to various authorities), who, being enamored of Jupiter, was changed by him into a beautiful heifer to avert the jealousy of Juno. The goddess discovered his secret, set Argus to watch the heifer, and when Mercury destroyed Argus by Jupiter's order, sent a malicious insect to torment her. The heifer wandered in distress to the Nile, where Jupiter restored her. She afterward gave birth to Epaphus and married Telegonus, King of Egypt. Æschylus mentions her in *Prometheus* and *The Suppliants*.

IODAMIDES, n. *ĭ-ŏd'a-mīds:* in *chem.*, $NI_3$ or $NHI_2$, term denoting a number of compounds, mostly of an explosive character, produced by the action of iodine on ammonia; they vary in composition and properties according to the mode of preparation. The product obtained is a brownish-black, soft powder, which in the dry state can scarcely be touched without exploding.

IODINE, n. *ī'ō-dīn* [Gr. *ĭōdēs*, resembling a violet—from *ĭŏn*, the violet; *eidos*, likeness: F. *iode*, or *iodine*]: an elementary body forming a solid substance of a grayish-black color, obtained from marine plants, sea-water, etc. IODATE, n. *ī'ō-dāt*, any salt of iodic acid. IODIC, a. *ī-ŏd'ĭk*, containing iodine. IODIDE, n. *ī'ō-dīd*, a. direct compound of iodine with a metal or other substance. I'ODOUS, a. *-dŭs*, of or from iodine. I'ODISM, n. *-dĭzm*, in *med.*, a morbid condition sometimes resulting from the use of iodine. IODITE, n. *ī'ō-dīt*, or IODIC SILVER, an ore of silver, consisting of iodide of silver. IODIUM, n. *ī-ō'dĭ-ŭm*, a Latinized form of the word *iodine*.

IODINE: symbol I, a non-metallic element, analogous in its general properties to chlorine and bromine. In its ordinary form it is a solid substance, melting at 237° F., and boiling at about 380° F. Solid iodine is soft, and dark gray in color, with a metallic lustre. The vapor is violet in color, from which circumstance the element takes its name. The atomic weight is 126.85 for O = 16, or 125.9 for H = 1. Solid iodine has a specific gravity of about 4.95 at ordinary temperatures, and a specific heat of about 0.05412. Iodine is freely soluble in alcohol, ether, carbon disulphid, chloroform, and glycerin. It is only slightly soluble in pure water, but dissolves readily in aqueous solutions of the iodides. It is also soluble in benzine, acetic acid, and numerous other organic fluids. It is a non-conductor of electricity.

Iodine was discovered by Courtois in 1811, in the mother-liquor of kelp that had been used for the production of sodium carbonate; occurring there in combination with sodium and magnesium. It is still obtained from the ashes of certain seaweeds, but the principal supply is now obtained from 'caliche,' a crude nitrate of sodium that occurs in immense quantities in northern Chili. In the preparation of commercially pure nitrate of soda from caliche, the mother liquors, after the removal of the nitrate by crystallization, are found to contain large quantities of iodine, chiefly in the form of iodate of sodium, $NaIO_3$; and it is from this substance that the iodine of commerce is chiefly prepared. The richest caliche contains about 3.5 pounds of iodine per ton.

With hydrogen, iodine forms the important compound HI, known as hydriodic acid. (See HYDRIODIC ACID.) With the metals it forms binary compounds called 'iodides,' which may also be regarded as salts of hydriodic acid. Of these the most important is potassium iodide, KI, which is largely used in medicine. It is prepared by dissolving iodine in a solution of caustic potash, evaporating to dryness, and igniting. This salt is very soluble, and crystallizes in cubes. The iodides of ammonium, sodium, strontium, and zinc are also used to a more limited extent. Iodine forms two important oxy-acids, known respectively as iodic acid, $HIO_3$, and periodic

acid, $HIO_4 + 2H_2O$. These are analogous, in their chemical department, to chloric and perchloric acids. Free iodine combines with starch to form a remarkable deep blue compound, whose production is a well-known test for the presence, in a given substance, of either starch or free iodine. To detect the presence of iodine in a solution, a few drops of thin, clear starch paste are added to the solution to be tested (which should be cold), and hydrochloric acid is added until the reaction is acid. A couple of drops of a concentrated solution of potassium nitrite are then added, when the dark blue color of iodide of starch will instantly be produced, if iodine is present. This test may readily be modified so as to serve for the detection of starch. The reaction is not given by dextrin, nor by other isomers of starch.

Iodine and its compounds are used to some extent in photography, and to a larger extent in synthetic chemistry, for the preparation of the coal-tar colors, (q.v.) and other organic substances. Iodine and the iodides are also of great importance in medicine. The exact method of action of the iodides is not clear, but it would seem that iodine, being a normal constituent of the human body, is a very essential element in normal metabolism. It is found in comparatively large quantities in the thyroid gland, which is known to exercise a very important action in the general body-metabolism, and it is probably by means of the stimulation of the general metabolism of the body that the iodides manifest their beneficial action. The iodides are freely absorbed from watery solutions by mucous membranes throughout the body, particularly in the stomach and intestine. They are taken up into the blood, pass through the tissues, stimulating the lymph-flow, and are excreted in the urine in the form of salts. Iodine itself possesses a local irritant action. It is soon converted into the iodides when taken internally, and causes similar internal changes.

When the iodides are taken in large doses, or even in small doses for a long time, a form of chronic poisoning known as iodism results. In this the chief symptoms, found in the air-passages, consist of a catarrh, especially of the nose, with profuse watery secretion, sneezing, and sometimes bronchitis. There is usually swelling and irritation of the throat and tonsils, and salivation. Nausea and gastric discomforts are common, and skin-eruptions are frequent. There is usually loss of weight, and if the iodide has been taken for a very long period a condition of cachexia, characterized by a great loss of flesh, weakness, depression and restlessness may result. The chief use of the iodides in medicine is in the treatment of syphilis, on which it has a specific effect. It is also very useful in the various joint-pains of a chronic character, usually known as chronic rheumatism. Iodine is valuable in the treatment of those diseases known to

result from thyroid insufficiency notably in myxœdema, and in cretinism, its allied form in children. For stimulation of the respiratory and nasal passages, as in chronic bronchitis, asthma, and dry nasal catarrh, the iodides are of great value.

IODOFORM, *ī-ŏd'ŏ-fawrm*, formula $CHI_3$, a yellow crystalline powder with a peculiar characteristic odor when warmed analogous in its chemical structure and deportment to chloroform. Iodoform may be prepared by dissolving iodine in an alcoholic solution of caustic potash, the iodoform that is produced separating out as a precipitate. It is also prepared in Germany, to a certain extent, by the electrolysis of a similar solution. It is much used as a surgical dressing, especially in the treatment of ulcers, aggravated sores, etc.

IO'LA, *ī-ō'la*, Kan.: city of Allen co., Kan., located on the left bank of the Neosho River, about 40 m. w. of the Missouri line, and about 100 m. s. of Kansas City. The town is reached by the Atchison, Topeka & Santa Fé, the Missouri, Kansas & Texas, and the Missouri Pacific railroads. The city is surrounded by a well-settled and prosperous agricultural community. An electric road connects Iola with a number of suburban towns, aggregating a population of 9,032 in 1910. It was laid out by the Iola Town Company in 1859. A post-office was located there the same year and a small village soon grew up. In 1865 it became the county-seat of the county, and grew steadily. In 1896 natural gas was discovered on the town site, and as soon as it was shown that a large gas field existed in and near the town it began to grow rapidly, the population in 1907 exceeding 11,000. This rapid growth followed the location in and near Iola of nine large zinc smelters, a number of brick factories, two Portland cement plants and other manufacturing enterprises attracted to the place by the cheap fuel which the large field of natural gas supplied. The leading church denominations are the Presbyterian, Methodist Episcopal, Christian, Baptist, Episcopal, Reformed and Catholic. The city is well supplied with schools, its high school being one of the best in the State. There are two daily papers, the *Record* and the *Register*.

IOLITE, n. *ī'ō-līt* [Gr. *ĭŏn*, the violet; *lithos* a stone]: one of the gems like sapphire, of various shades of pale and dark blue, occurring in granitic and primitive rocks: see DICHROITE.

ION, n. *ī'ŏn* [Gr. *ĭōn*, going]: either of the two elements which are evolved out of a particular substance by the voltaic current, and which appear at the poles of the battery.

I'ON. See IONIA.

IONA, *ē-ō'na:* modern name of the most famous of the Hebrides. Iona is on the w. coast of Scotland, abt. 8 m. s. of Staffa; and 1¼ m. w. of the s.w. promontory of

Mull, from which it is separated by the sound of Iona. It is about three m. long, and varies in breadth from a mile to a mile and a half. Pop. about 250. Its area, computed by Bede at 'five families' (or 'five hides of land,' as the passage is rendered in the Anglo-Saxon Chronicle), is estimated at 2,000 imperial acres, of which rather more than a fourth part is under tillage. The soil is naturally fruitful, and yields earlier crops than most parts of Great Britain, barley sown before the middle of June being ready for the sickle in August. This remarkable fertility was regarded as miraculous in the dark ages, and, no doubt, led to the early occupation of Iona. Dunii, the highest point of the island, is 330 ft. above sea-level.

Its history begins in 563, when St. Columba (q.v.), leaving the shores of Ireland, landed upon Iona with 12 disciples. Having obtained a grant of the island, as well—it is said—from his kinsman Conall, son of Comghall, King of the Scots, as from Bruidi, son of Melchon, King of the Picts, he built on it a monastery, long regarded as the mother-church of the Picts, and venerated not only among the Scots of Great Britain and Ireland, but among the Angles of n. England, who owed their conversion to the self-denying missionaries of Iona. From the end of the 6th to the end of the 8th c., Iona was scarcely second to any monastery in the British Isles. But neither piety nor learning availed to save it from the ravages of the fierce and heathen Norsemen. They burned it in 795, and again 802. Its 'family' (as the monks were called) of 68 persons were martyred 806. A second martyrdom, 825, is the subject of a contemporary Latin poem by Walafridus Strabus, abbot of the German monastery of Reichenau, in the Lake of Constance. On Christmas evening of 986, the island was again wasted by the Norsemen, who slew the abbot and 15 of his monks. Toward the end of the next century, the monastery was repaired by St. Margaret, queen of King Malcolm Canmore. It was visited 1097 by King Magnus the Barefooted, of Norway. It was now part of that kingdom, and so fell under the ecclesiastical jurisdiction of the Bp. of Man and the Abp. of Drontheim. In 1203, the bishops of n. Ireland disputed the authority of the Manx bishop, pulled down a monastery which he had begun to build on the island, and placed the abbey under the rule of an Irish abbot of Derry. The Scottish Church had long claimed jurisdiction in Iona, and before the end of the 13th c., the island fell under the rule of the Scottish king. Its abbey was now peopled by Clugniac monks; and a nunnery of Austin canonesses was planted on its shores. Toward the end of the 15th c., it became the seat of the Scottish Bishop of the Isles, the abbey church being his cathedral, and the monks his chapter.

No building now remains on the island which can

claim to have sheltered St. Columba or his disciples. The most ancient ruins are the Laithrichean, or Foundations, in a little bay to the west of Port-a-Churraich; the Cobhan Cuildich, or Culdees' Cell, in a hollow between Dunii and Dunbhuirg; the rath or hill-fort of Dunbhuirg; and the Gleann-an-Teampull, or Glen of the Church, in the middle of the island, believed to be the site of the monastery which the Irish bishops destroyed 1203. St. Oran's Chapel, now the oldest church in the island, is probably of the latter part of the 11th c. St. Mary's Nunnery is perhaps a century later. The Cathedral, or St. Mary's Church, seems to have been built chiefly in the early part of the 13th c.: it has a choir, with a sacristy on the n. side, and chapels on the s. side; n. and s. transepts; a central tower, about 75 ft. high; and a nave. An inscription on one of the columns of the choir appears to denote that it was the work of an Irish ecclesiastic who died 1202. On the n. of the cathedral are the chapter-house and other remains of the conventual or monastic buildings. In the 'Reilig Oran'—so called, it is supposed, from St. Oran, a kinsman of St. Columba, the first who found a grave in it—were buried Ecgfrid, King of Northumbria, 684; Godred, King of the Isles, 1188; and Haco Ospac, King of the Isles, 1228. No monuments of these princes remain. The oldest of the many tombstones on the island are two with Irish inscriptions, one of them, it is believed, being the monument of a bishop of Connor who died at Iona 1174.

It now possesses a church connected with the Established Church of Scotland, also a Free Church, and a school. A small and commodious inn—the St. Columba—was erected 1863 by the Duke of Argyll, proprietor of Iona; and tourists and antiquarian explorers can now make visits of satisfactory duration. During summer, steamers from Oban (see HEBRIDES) call at Iona twice a week; they land passengers by boats at Baile Mor, the only village on the island, and usually allow time for visiting the ruins.

IONIA, *ī-ō′nĭ-a:* ancient name of the most flourishing country of Asia Minor. It received its name from the Ionians (one of the four most ancient tribes in Greece), who, again, according to the mythological account, derived theirs from Ion, whom Euripides in his tragedy *Ion* makes the son of Apollo by Creusa, daughter of a king of Athens. According to the usually received tradition, they were driven out of the Peloponnesus by the Achaians, and removed to Attica, whence, about B.C. 1050, bands of them went forth to settle on the coast of Asia. Ionia was a beautiful and fertile country, a strip of land along the w. coast of the Ægean Sea, extending, according to Ptolemy, from the river Hermus to the river Meander; but Herodotus and Strabo make it somewhat larger. It soon reached a high point of prosperity; agriculture and commerce flourished, and

great cities arose, of which Ephesus, Smyrna, Clazomenæ, Erythræ, Colophon, and Miletus were most celebrated. These free cities, the nucleus of the IONIAN LEAGUE, were, however, gradually subdued by the kings of Lydia, and passed (B.C. 557) under the sway of the Persians, but were allowed considerable internal liberty. During the great Persian war, the contingent which they were compelled to furnish to their Oriental masters deserted to the Greeks, at the battle of Mycale (B.C. 479), whereupon the Ionians entered into an alliance with Athens on which they now became dependent. After the Peloponnesian war, they were subject to the Spartans, and again (B.C. 387) to the Persian till the time of Alexander the Great. From this period Ionia shared the fate of the neighboring countries, and B.C. 64, was added to the Roman empire by Pompey, after the third Mithridatic war. In later times, it was so ravaged by the Turks that few traces of its former greatness are left.—The *Ionians* were regarded as somewhat effeminate. They were wealthy and luxurious, and the fine arts (see IONIC ARCHITECTURE) were cultivated among them at a much earlier date than among their kinsmen in the mother country. The *Ionic Dialect* excels the other Greek dialects in softness and smoothness, chiefly from its greater number of vowels.

IONIA, *ī-ō′nĭ-a:* city, cap. of Ionia co., Mich.; on Grand river, and on the Detroit G. H. & M., the Pere M., and the Grand T. R.R.'s; 34 m. east of Grand Rapids. It contains the State house of correction, the State asylum for the dangerous and criminal insane, large railroad repair shops, and manufactories of pottery, furniture, machinery, edged tools, and clothing. The industrial interests are greatly promoted by excellent power furnished by the river. The city has a public high school, library, several daily and weekly periodicals, and an assessed property valuation of about $2,500,000. Under the revised charter of 1897, the government is administered by a mayor and city council elected annually. Ionia was settled in 1833, and incorporated in 1873. Pop. (1910) 5,030.

IONIAN, a. *ī-ō′nĭ-ăn* [Gr. *Ionia,* a district of Asia Minor on the Ægean Sea, first colonized by Ion]: of or relating to Ionia, or its inhabitants. IONIC, a. *ī-ŏn′ĭk,* pertaining to Ionia: denoting one of the five orders of architecture—the five orders being, 1, Tuscan, 2, Doric, 3, Ionic, 4, Corinthian, 5, Composite. IONIAN MODE, in music, one of the old church modes, said to be the same as the ancient Greek mode of that name, and the only one of the old church modes which agrees with our modern system of music, the Ionian mode being the same as our key of C major. The character of the Ionic mode, however, must have appeared to the ancients more properly defined than it can to us, as it was the only one of their modes which had a major third and a sharp seventh.

## IONIAN ISLANDS.

IO'NIAN ISLANDS: group, or rather chain of islands round the w. coast of Epirus, and w. and s. of Greece. It consists of about 40 islands, of which Corfu, Paxo, Santa Maura, Theaki, Cephalonia, Zante, and Cerigo, are of considerable size: total area about 1,100 sq. m.; pop. (1900) 251,712, mostly Greek descent. All these islands belong to the great calcareous formation of Greece. They are extremely mountainous, and do not contain enough arable land to produce the corn required by the population; and were it not for the vine, olive, and currant, all of which they produce, they could sup port but a small number of inhabitants. The climate is even more temperate than that of the neighboring mainland. Snow often falls in the winter, and lies on the mountains, but rarely on the plains. The staple exports are oil, currants, valonia, wine, soap, and salt. The few manufactures are chiefly textile and ornamental. The religion is that of the Eastern Greek Church, to which four fifths of the population belong. Each island has its own bishop, and at the head of the whole is an ex-arch or primate. The collective term 'Ionian' is of modern date. After the division of the Roman Empire these islands were included in the e. half, and so continued till 1081, when the Duke of Calabria (subsequently king of Naples) took possession of them. From this time they underwent continual change of masters, till the commencement of the 15th c., when they by degrees came into the possession of the Venetians, who 1797 ceded them to France. They were seized by Russia and Turkey 1800, by France 1807, by Britain 1809, and 1815, Nov. 5, were formed into a republic ('The Septinsular Republic') under the protectorate of Great Britain. While they were connected with England, the government was carried on by two assemblies, and the *lord high commissioner* as representative of the queen. Till 1848, the press was restricted, and the government was really a despotism, but in that and the following year wide-spread dislike of the English government became apparent. To remove what were supposed to be grievances, Lord Seaton, then lord high commissioner, introduced sweeping changes in the constitution, including vote by ballot, lowering of the franchise, and freedom of the press. A demand was then made for annexation to to the kingdom of Greece, and an insurrection broke out 1849, Aug., in Cephalonia. It was suppressed by Sir Henry Ward, who had succeeded lord Seaton, with what was considered by some persons with undue severity. Fresh concessions were granted, but without appeasing the malcontents. In the end of 1858, William E. Gladstone was sent as a special commissioner to ascertain what could be done to meet the claims of the population. He found that they would be satisfied with nothing but annexation to Greece. There was no great desire on the part of the English govt. to continue their connection

with the islands. They had cost the United Kingdom £100,000 per annum, and had been a perpetual annoyance. In 1863 the election of the son of the king of Denmark as constitutional king of Greece supplied England with an opportunity for riddance of this troublesome dependency; and, 1864, Mar. 29, a treaty was concluded at London by which they were annexed to Greece, and since they have formed a province of the Hellenic kingdom. In 1867, Feb., they were visited by a series of earthquakes, most violent in Cephalonia, where they caused great destruction of life and property, and almost destroyed the two chief towns.

IONIAN PHILOSOPHY: the earliest school of Greek philosophy, a school which attempted to explain the phenomena of nature from the forces and attributes of matter itself. In order to do this the philosophers of this school followed two courses, some assuming a single original substance as the ground of all things, and explaining the development and formation of the phenomenal world by a process of condensation and rarefaction which they conceived as affecting the mode of existence of that substance; while others considered all things as formed by separation and combination out of a permanent and unalterable primitive form of matter. According to the view of the first class of Ionian philosophers, therefore, the original material principle was conceived as itself liable to change, and the changes which take place in it were held to give rise to the forms by which the world is known to us; while according to the view of the second class of Ionian philosophers the original material principle was looked upon as in its own nature and qualities unchangeable, and everything was explained by a change of external relations in space.

IONIAN SCHOOL: the school of philosophy which started from the Ionian city of Miletus. The leader of the school was Thales, who started from a disbelief in the current mythological fables of his day. Thales was born about 636 B.C. He was a man of political activity as well as of deep meditative habits. He was proficient in mathematical knowledge and founded the Ionian school which was principally concerned in an inquiry as to the constitution of the universe. He propounded the axiom that the basis of all phenomena was water, and perhaps he was just as near the truth as Huxley when he declared that everything came out of what he called, by a question-begging term, protoplasm. The next philosopher of the Ionian school was Anaximenes 529 B.C. He also was a materialistic philosopher and like Liebig believed that the origin and substance of everything was air. Diogenes of Apollonia went farther than his predecessor and taught that the basis of phenomena was mind. The Ionian school found its highest development in Anaximander of Miletus 610 B.C.,

who taught what has been the profoundest discovery of all philosophy ancient or modern that the basis of being was *τὸ ἄπειρον*, the Infinite.

IO'NIAN SEA: ancient name for that part of the Mediterranean w. of Greece, and separating it from Italy and Sicily. It contained the Ionian Islands (q.v.), and was connected with the Adriatic Sea by the strait of Otranto.

ION'IC AR'CHITECTURE: style of Greek architecture which took its origin in Ionia, and seems to have derived many of its characteristic features from Assyria. (See GRECIAN ARCHITECTURE). The chief peculiarity of Ionic Architecture is the capital of the column (q.v.), which is decorated with spiral ornaments called volutes (q.v.). The columns have also bases, which were not used in Doric architecture. The cornice is distinguished by the dentil band, an ornament introduced first in this style. The honeysuckle ornament (q.v.) so much used in Ionic Architecture, is one of the features which indicate its eastern origin. Many large temples were erected in this style in Asia Minor and Greece. Among the finest examples remaining are the temples of Erechtheus and Minerva Polias on the Acropolis at Athens, Apollo Didymæus at Miletus, Minerva Polias at Priene, and Bacchus at Teos; and the temple of Fortune at Rome.

IOTA, n. *ī-ō'tă* [Gr. *ι*, called *iota* (see JOT)]: a jot; a tittle. IOTACIZED, a. *ī-ō'tă-sīzd*, formed by the insertion of an *i*.

I O U [contr. of the sentence or phrase, 'I owe you']: brief memorandum of debt given by a borrower to a lender, so called from being made in this abbreviated form:

NEW YORK, *January* 1, 1908.
Mr. A. B., I. O. U. $20.
C. D.

It is a convenient document from its simplicity; yet it is valuable evidence of the existence of the debt, in case an action is afterward brought. If the I. O. U. contain any promise to pay the debt, then it will amount to a promissory-note.

IOWA, *ī'o-wa:* state, one of the United States of America: 16th in order of admission into the Union; 1st in hog production, oats, and manufacture of butter, 2d in milch cows, oxen, and other cattle, corn, and hay, 3d in number of horses; 4th in agriculture, 5th in barley, potatoes and railroad mileage; 7th in coal and wheat, 10th in population; known as the 'Hawkeye State.' The name Iowa is of Indian origin, meaning 'the beautiful land.'

*Location and Area.*—Iowa is in the centre of the upper Miss. valley, lat. 40° 30′—43° 30′ n., long. 89° 5′—96° 31′ w.; bounded n. by Minn., e. by Wis. and Ill.,

s. by Mo., w. by Neb. and S. Dak.; extreme length n. to s. 208 m., extreme width e. to w. 300 m.; river frontage (Miss. and Mo.) 729 m.; 56,025 sq.m. (35,856,000 acres); highest elevation above sea-level 1,695 ft., lowest 444, average 800–900; cap. Des Moines.

*Topography.*—The surface in general is an undulating prairie without mountains or notable hills, but with one great watershed dividing the rivers that flow into the Miss. on the e. and the Mo. on the w., and a minor one extending s. from Adair co., the two giving n. to s. and e. and w. slopes. 95 per cent. of the whole area is arable and exceedingly productive. Of the 35,856,000 acres, more than 25,000,000 were improved in 1890, and the greater part in the highest state of cultivation; much of the unimproved was in rich pasture. The soil is a deep, dark, fertile loam, watered by copious streams, and requiring no fertilizers. The Miss. river borders the state on the e. for 365 m., and the Mo. river on the w. for 364; the former receives the waters of the Upper Iowa, Turkey, Maquoketa, Wapsipinicon, Iowa, Cedar, Skunk, and Des Moines rivers, and the latter those of the Chariton, Grand, Platte, Nodaway forks, and Nishnabatona rivers. There are two series of rapids in the Miss. river opposite Iowa, the upper extending from Davenport to LeClaire, and the lower (Des Moines Rapids) from Keokuk to Montrose. The n. cos. of Iowa are dotted with very picturesque lakes, of which Spirit, Okoboji (both popular summer resorts), Clear, and Storm are the largest, though none are of great extent.

*Climate.*—The climate is delightful, healthful, and invigorating, and owing to the perfect system of natural drainage malaria is almost unknown. In general salubrity Iowa holds the first rank among the states. The mean annual temperature ranges from 42° to 52°, the summer mean 66° to 79°, and the winter mean 14° to 27°; highest temperatures recorded 95° to 105°, lowest 18° to 33° below zero; temperature lowest and extremes greatest in the n. and w., mildest and most equable with greatest rainfall in the s.e.; average rainfall 43½ inches; snow, less in quantity than in e. states, lasts longer; the Miss. and Mo. rivers opposite Iowa and the interior rivers and lakes remain frozen 3 months each year.

*Geology.*—The systems underlying the coal measures of Iowa precede them as they extend northward, in such a manner that the carboniferous finally runs directly against and overlaps the lower formations as they emerge one above the other to the surface. Thus, in ascending the Des Moines river to a point 9 m. above Fort Dodge, the carboniferous system is seen running against the sub-carboniferous, and then entirely disappears, giving way to the St. Louis limestone; and in ascending the Miss. river the carboniferous gives way

Area in Square Miles, 56,025. Population, 2,231,853.
Number of Counties, 99. Capital of State, Des Moines.

to the sub-carboniferous, that to the Devonian near Davenport, and that to the Upper Silurian and Lower Silurian at Dubuque. The area of the coal measures (mainly bituminous) is estimated at 20,000 sq.m. or more than one-third of the entire area of the state. Coal mining forms one of the most extensive industries of the State, enlisting the activities of a large number of workers. The average annual output of bituminous coal is about 7,000,000 tons. It is the leading coal state west of the Miss., except Colorado. Its limestone, the finest grade of building stone, is quarried to the extent of about $800,000 a year. Vast deposits of gypsum, black-band and Kidney iron-ore, argentiferous galena lead-ore, red and Spanish brown ochre, peat that yields richly of dry fuel, Potsdam and St. Peter's sandstone, Lower Magnesium, Trenton, Galena, Niagara, and Hamilton limestone, and fire and potter's clay abound. The soil is drift, bluff, and alluvial; the former covers the greater part of the state and is a dark loam one to two ft. in depth; the bluff along the Miss. river is supposed to be a sub-aerial deposit brought by the wind from Neb. and S. Dak., and in some places reaches a depth of 200 ft.; and the alluvial in the valleys and bottom-lands is a deposit of the water-courses. Forests and woodlands occupy 4,985,668 acres, and yield several kinds of oak, beside elm, cotton wood, black walnut, hickory, sugar and soft maples, linden, wild cherry, ash, butternut, sycamore, pine, and red cedar. Among native fruit trees are the plum, crabapple, and cherry, and the nuts include hickory, hazel, pecan, black walnuts, and butternuts. Grapes, apples, and pears are abundant, and the usual variety of small fruits and garden vegetables thrive well.

*Zoology.*—Wild animals have become nearly extinct in the state. Deer, gray wolf, wild cat, and prairie wolf are occasionally found in the woodlands; and the beaver, otter, muskrat, mink, and raccoon, in or near some of the rivers. Small game, ruffed grouse, prairie hen, quail, snipe, woodcock, and several varieties of duck, are abundant in season; as also are salmon, lake and brook trout, white fish, perch, roach, common and brown cat-fish, and other species, favorites of the sportsman and epicure.

*Agriculture.*—There are about 250,000 farms in the S., comprising over 35,000,000 acres, of which about four-fifths is improved lands, buildings, and improvements, implements and machinery, and live stock, aggregates about $2,000,000,000, while the total value of all farm products is about $400,000,000. The land is easily worked, presenting mainly a friable black loam on the top, from 1 to 5 ft. deep, and being in the main free from stumps and stones and requiring little or no commercial fertilizers. It has three main varie-

ties, the principal being the alluvial mud of the river bottoms, the glacial drift of the prairies, covering most of the State, a sand and clay loam, and the loess, a rich, yellow composit containing much carbonate of lime, found at great depth along the Missouri slope and on the streams in the central and e. portions. There is now practically no waste land in the State, while the small portion which represents unimproved land, besides giving an excellent timber yield, affords fine pasture land in places. All these natural advantages combine to make I. one of the most valuable agricultural States in the Union. The chief crop is corn, while other valuable crops are wheat, oats, barley, rye, buckwheat, hay, and flaxseed. The S. also has a considerable fruit crop, especially apples, the total annual value of all orchard products amounting to about $2,000,000, exclusive of the output of small fruits and berries, which are worth about half as much each year. Dairy products, poultry, and eggs are also among the valuable products.

*Manufactures.*—There are about 5,000 manufacturing establishments in I., the principal industries being slaughtering and meat packing, cheese, butter, and condensed milk, flour and grist-mill products, printing and publishing, cars and general shop construction, food preparations, lumber and timber products, foundry and machine-shop products, and bread and other bakery products. A comparatively young industry, which is yearly assuming added importance, is the manufacture of pearl buttons from mussel shells found in the beds of the streams. This industry centres about Muscatine, and has grown so rapidly that its annual output is worth nearly $2,000,000, and with the manufacturers uniting in the protection of the sources of supply, there seems no reason why it should not eclipse this figure in future.

*Commerce and Transportation.*—I. has no direct foreign commerce, but has a large internal and interstate trade in cereals, packed meats, merchandise, coal, and lead. The total imports are rarely much in excess of $60,000 a year. Several of the interior rivers are navigable for small craft, the Des Moines for 100 m., the Missouri for its entire length, and the Mississippi for all classes of river steamers. Of these, however, the latter is practically the only one in general use. The S., lying in the main path of transcontinental commerce, is a vast network of railroads, several grand trunk lines crossing it, while every one of its 99 counties has at least one railroad. Altogether there are about 10,000 miles of track, besides approximately 600 miles operated by about 30 lines of street railways.

*Finance and Banking.*—The total assessed valuation of all property in I., including both personal and realty, is $624,391,061, and the tax rate $3.30 per $1,000. There is no bonded debt. There are well over 300 national banks, about 250 State banks, over 350 savings banks, and about 575 private banks.

*Religion.*—The strongest denominations in I. are the Methodist, Lutheran (three branches), Roman Catholic, Baptist, Christian (Disciples), Presbyterian, Congregationalist, United Brethren, Evangelical Association, Protestant Episcopal, Friends Reformed, and Adventist.

*Education.*—I. annually spends nearly $11,000,000 in the maintenance of its public schools, in which there are nearly 555,000 pupils enrolled, with over 28,000 teachers. There are public normal schools, private secondary schools, co-educational colleges and universities, as well as colleges and universities for men only, and schools of technology, theology, law, and medicine. The S. University, the head of the public school system, is at Iowa City, the former capital, with colleges of liberal arts, law medicine, homœopathic medicine, dentistry, pharmacy, graduate college, applied science, and a summer school. There is also a S. College of Agriculture and the Mechanic Arts, located at Ames. In 1902 a Memorial University was opened at Mason City by the national order of the Sons of Veterans. Connected with certain of the public secondary schools are more than 20 training classes for teachers, while the Roman Catholic Church supports about 25 schools of higher education in the shape of colleges and academies.

*Charities and Corrections.*—The S. charitable institutions include four insane hospitals, four private asylums, a school for the deaf at Council Bluffs, a school for the blind at Vinton, an institution for feeble-minded children at Glenwood, a soldiers' home at Marshalltown, and a home for soldiers' orphans at Davenport. There are S. penitentiaries at Anamosa and Fort Madison, an industrial school for boys at Eldora, besides a similar institution for girls at Mitchellville.

*History.*—The territory now included in Iowa formed a part of the great tract claimed by the French on account of Jacques Marquette's discovery 1673, transferred by treaty to Spain 1763, receded to France 1800, and included in the Louisiana purchase by the United States 1803. The earliest inhabitants were portions of the Sac, Fox, Sioux, Iowa, and Dakota tribes of Indians. In 1788 the French made a short-lived settlement at Dubuque and worked the lead mines there; 1805 the territory included in the Louisiana purchase was made a separate territory; 1812 the name was changed to Missouri Territory; 1834 the Iowa portion became a part of Michigan Territory; 1836 it was transferred to the jurisdiction of Wisconsin Territory; 1838 was organized as Iowa Territory; 1846 the e. and s. portion was admitted into the Union as a state, the n. and w. parts remaining Iowa Territory. The permanent settling of the territory under authority of the federal govt. began 1833, June 1, and terr. and state have had uninterrupted prosperity since. The present constitution of Iowa is its second and was adopted 1857, the year the

capital was removed to Des Moines. The legislature several times passed acts, striking out the word 'white' where it was used in the constitution to define the qualifications of voters, the basis of representation, and the obligations of militia duty, and the people ratified the changes. In 1870 an attempt was made to have the constitution revised but the popular vote was against the measure. Iowa sent 76,242 men into the Union army during the civil war.

*Government.*—The executive authority is vested by the constitution in a governor, elected for 2 years; the legislative in a general assembly comprising a senate of 50 members elected for 4 years, and a house of representatives of 108 members elected for 2 years, salary of each $550 per annum, biennial sessions; and the judicial in supreme and district courts. The supreme court has 6 judges elected by the people for 6 years each, one every second year, and the chief justice is he who has the shortest term to serve. District court judges are elected for 4 years. There are also a lieutenant-governor, secretary of state, State treasurer, State auditor, attorney-general, superintendent of public instruction, 3 railroad commissioners, and state librarian. The constitution was adopted in 1857. By law, the electors must vote once in 10 years on calling a convention to revise the constitution, which convention the legislature must call if so voted. All amendments must receive a majority vote of both houses at two successive legislatures, and then be passed by popular vote. Bills must have a majority of all members elected to both houses—not merely present. A two-thirds vote overcomes the governor's veto. Women may vote only on school questions involving the expenditure of money. All incorporated towns of 2,000 people and over are ranked as cities; all platted but unincorporated towns are villages. The number of representatives to Congress is 11. The successive govs. with their terms of service are as follows: terr.: Robert Lucas, 1838–41; John Chambers, 1841–6; James Clark, 1846; state: Ansel Briggs, 1846–50; Stephen Hempstead, 1850–4; James W. Grimes, 1854–8; Ralph P. Lowe, 1858–60; Samuel J. Kirkwood, 1860–4; William M. Stone, 1864–8; Samuel Merrill, 1868–72; Cyrus C. Carpenter, 1872–6; Samuel J. Kirkwood, 1876–7; Joshua G. Newbold, 1877–8; John H. Gear, 1878–82; Buren R. Sherman, 1882–6; William Larrabee, 1886–90; Horace Boies, 1890–4; Frank D. Jackson, 1894–6; Francis M. Drake, 1896–8; Leslie M. Shaw, 1898-1902; Albert B. Cummins, 1902-08; B. F. Carroll, 1908—.

*Politics.*—State elections are held biennially, Tuesday after the first Monday in Nov. in the even years. Idiots, insane, and criminals are excluded from voting. Iowa has 13 electoral votes. Her votes for pres. and vice-pres. have been as follows: 1848, Lewis Cass and William

O. Butler 4; 1852, Franklin Pierce and William R. King; 1856, John C. Fremont and William L. Dayton; 1860, Abraham Lincoln and Hannibal Hamlin; 1864 Abraham Lincoln and Andrew Johnson 8; 1868, U. S. Grant and Schuyler Colfax; 1872, U. S. Grant and Henry Wilson 11; 1876, Rutherford B. Hayes and William A. Wheeler; 1880, James A. Garfield and Chester A. Arthur; 1884, James G. Blaine and John A. Logan 13; 1888, Benjamin Harrison and Levi P. Morton, 13; 1892, Benjamin Harrison and Whitelaw Reid, 13; 1896, Wm. McKinley and Garret A. Hobart, 13; 1900 Wm. McKinley and Theodore Roosevelt, 13; 1904, Theodore Roosevelt and Charles W. Fairbanks, 13.

*Cities.*—The capital, Des Moines, on the river of the name, is the largest city, with 86,368 in 1910. On the same river to the north is Fort Dodge, an old frontier fort and settlement (15,543), and below it Ottumwa (20,181) and Keokuk (14,604). The Mississippi River business is chiefly represented, from north to south, by Dubuque (38,494—the first settled site in the State), Clinton (25,577), Davenport (43,028), Muscatine (16,178), Burlington (24,324), Fort Madison (8,900), and Keokuk (14,008),
Des Moines. Sioux City (47,828), in the extreme west near the mouth of the Big Sioux, and Council Bluffs (29,292), opposite Omaha, the old terminus of the Union Pacific, represent the Missouri River; Cedar Rapids (32,811) and Waterloo (26,693), the valley of the Cedar River; and Marshalltown (13,374), the valley of the Iowa River.

*Population.*—(1840) 43,112; (1850) 192,214; (1860) 674,913; (1870) 1,194,020; (1880) 1,624,615; (1885) 1,753,980; (1890) 1,911,896; (1900) 2,231,853; (1910) 2,224,771.

I'OWA RIVER: stream of Iowa, rising in Hancock co., flowing s.e. for 300 m., 80 of which are navigable, and emptying into the Miss. river 35 m. n. of Burlington.

I'OWA CITY: city and county-seat of Johnson co., Iowa, on the Iowa River, and the Burlington, C. R. & N., and the Chicago, R. I. & P. R.R.'s; 54 miles west of Davenport. The city is pleasantly built on a succession of plateaus, rising one above another from the river banks, which are here high. The first plateau is laid out as a public promenade, and the third, which is about 30 feet higher than the first, is crowned by a handsome Doric edifice 120 feet long and 60 feet wide, of a beautifully marked stone quarried in the vicinity called 'bird's-eye marble.' This building was originally intended for the State capitol, but, on the removal of the seat of government to Des Moines, was appropriated to the State University. From 1839 to 1854, this was the seat of the Territorial and State governments. It is the seat of the State University of Iowa (q.v.), the Iowa State Academy, the State Historical Society and

Library, the Homeopathic, Allopathic, and Mercy hospitals. It is the farming trade centre for Johnson, Cedar, and Iowa counties, with an annual trade exceeding $1,000,000; has excellent power provided by the Iowa River; and has manufactories of flour, iron, woolen goods, perfumery, gloves, jewelry, fencing, and linseed oil. The city has electric light and street railroad plants, waterworks on the Holly system, numerous churches, and an assessed property valuation of about $6,500,000. Besides its manufacturing interests the city has an extensive stockraising and meat-packing industry. Pop. (1910) 10,091.

I'OWA COLLEGE: at Grinnell, Poweshiek co., Io.; oldest college in the state; founded 1846 by the 'Iowa Band' of students from Andover Theol. Seminary (Congl.); opened at Davenport 1848; removed to Grinnell and merged in Grinnell Univ. 1858; destroyed by a tornado 1882; and since rebuilt on a larger scale than before. Within three years after the loss of buildings, apparatus, and valuable records by the tornado, the two original buildings were replaced by four new and better ones, and the work of the institution was but briefly interrupted. The grounds comprised 25 acres, to which 5 were added by gift for the use of the ladies' dept. 1888. The buildings are Blair Hall, to which John Insley Blair of N. J. gave more than $15,000; Chicago Hall, begun with contributions from Chicago; Alumni Hall, built chiefly through the efforts of the class of '82 and other graduates; and Goodnow Hall (erected 1885), named from E. A. Goodnow of Worcester, Mass. The latter contains the astronomical observatory, in which an 8-in. Clark objective telescope was erected 1888, Feb. Iowa College has real estate valued at $130,000, and other property $175,000, an annual income of about $70,000, and no debt. Ladies were admitted 1857. There are 40 professors and instructors; the average number of students is 600; and the volumes in the library number about 38,000.

I'OWAS: tribe of American Indians of the Dakota family, calling themselves Pahucha (dusty nose), and known among the Algonquin tribes as Iowas and Mascoutin or Prairie Nadouessis. Marquette found 8 distinct clans of them in the region of the present city of Des Moines 1673. In 1700 they lived along the Mankata or Blue Earth river in Minn.; 1824 ceded all their lands in Mo. Terr. to the United States and established their chief villages on the Iowa and Des Moines rivers; 1836 removed to the w. bank of the Mo. river above Wolf river; 1846 ceded to the United States all their reservation excepting 16,000 acres; and 1883 were given a reservation in Indian Terr. between the e. border of the Oklahoma district (opened to settlement 1889) and the reservation of the Sacs and Foxes. They have diminished rapidly in numbers by tribal wars and disease, and are estimated at less than 1,000.

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS: near Ames, Story co., Io.; founded as a state institution by the legislature 1858; endowed with the congressional land grant awarded the state of Io. (204,309 acres) 1862; and organized under its present form 1869. In 1906 it had 130 professors, instructors, and lecturers, 1,331 students; 21,000 vols. in library; grounds, buildings, and apparatus valued at $360,000; productive funds $683,708; income, including Federal appropriation, $120,000. The farm comprises 900 acres valued at $35,000, one-half occupied for purely agricultural work, the other for gardening, forestry, and ornamental work. Regular courses are offered in agriculture, mechanical engineering, civil engineering, electrical engineering, mining engineering, technology, science as related to industry, and general and domestic science; special shorter courses are given in the fall and winter in dairying, agriculture and mechanics, horticulture and mechanics, and domestic science. The State Agricultural Experiment Station is also allied with the college.

IOWA STATE UNIVERSITY: at Iowa City, Ia.; chartered 1847, founded 1855, organized 1860; originally endowed by congress with two townships of land from which it has a permanent fund. It has received $28,000 annually from the state since 1878; and has further receipts from biennial legislative appropriations and tuition fees. In 1906–7 it had 150 professors and instructors; 2,072 students; 58,000 vols. in its library; grounds, buildings, and apparatus valued at $400,000; productive funds $235,120; income, total, $440,406. Since its permanent organization it has added to its college of liberal arts seven others, law 1868, medical 1870, homœopathic medical 1877, dental 1882, pharmaceutical 1886, graduate college 1896, and applied science 1905.

IOWA WESLEYAN UNIVERSITY: a coeducational institution founded in 1844, at Mount Pleasant, Iowa; under the auspices of the Methodist Episcopal Church. In 1906 it had 32 professors and instructors, and 408 students. There are 8,500 volumes in the library. It has productive funds, $61,820; grounds and buildings valued at $150,000; and an income of $28,000.

IPECACUANHA, n. *ĭp'ĕ-kăk'ū-ăn'ă* [Brazilian or Port.; the name in Brazil is said to signify, 'the roadside sickmaking plant']: name both of a very valuable medicine and of the plant producing it. The plant (*Cephaëlis Ipecacuanha*) belongs to the nat. ord. *Cinchonaceæ*, and grows in damp shady woods in Brazil and some other parts of S. America. It is somewhat shrubby, with a few oblongo-lanceolate leaves near the ends of the branches, long-stalked heads of small white flowers, and soft dark purple berries. The part of ipecacuanha used in medicine is the root, which is simple or divided into a few branches, flexuous, about as thick as a goose-

quill, and is composed of rings of various size, somewhat fleshy when fresh, and appearing as if closely strung on a central woody cord. The different kinds known in commerce (*Gray, Red, Brown*) all are produced by the same plant; the differences arising from the age of the plant, the mode of drying, etc. Ipecacuanha root is prepared for the market by mere drying. It is collected at all seasons, though chiefly from January to March; the plant is never cultivated, but is sought for in the forests chiefly by Indians, some of whom give months at a time to this occupation. It has now become scarce in the neighborhood of towns.

Various other plants, containing emetine, are used as substitutes for true ipecacuanha. The ipecacuanha of Venezuela is produced by *Sarcostemma glaucum*, of the order *Asclepiadeœ;* and to this order belongs *Tylophora asthmatica*, the root of which is found a valuable substitute for ipecacuanha in India.

It is in the bark of the root that the active principle, the *emetine*, almost entirely lies, and in good specimens it amounts to 14 or 16 per cent.; the other ingredients, fatty matters, starch, lignine, etc., being almost inert. Emetine is represented by the formula $C_{30}H_{44}N_2O_4$. It is a white, inodorous, almost insipid powder, moderately soluble in alcohol, and having all the characters of the vegetable alkaloids. It acts as a violent emetic in doses of $\frac{1}{16}$ of a grain or less, and is a powerful poison. The incautious inhalation of the dust or powder of ipecacuanha—as in the process of powdering it—will often bring on a kind of spasmodic asthma. In small and repeated doses—e.g. a grain or less—ipecacuanha increases the activity of the secreting organs, especially of the bronchial mucous membrane, and of the skin. In larger doses 1 to 5 grains it excites nausea and depression, while in doses of from 15 to 30 grains it acts as an emetic, without producing such violent action or so much nausea and depression as tartar emetic.—Ipecacuanha is useful an an emetic when it is necessary to unload the stomach in cases where there is great debility, or in childhood. As a nauseant, expectorant, and diaphoretic, it is prescribed in affections of the respiratory organs, as catarrh, whooping-cough, asthma, etc.; in affections of the alimentary canal as indigestion, dysentery, etc.; and in disorders in which it is desired to increase the action of the skin, as in diabetes, febrile affections, etc.

Besides the powder, the most useful preparations are the wine of ipecacuanha—of which the dose to an adult as a diaphoretic and expectorant ranges from 10 to 40 minims, and as an emetic from 1 to 4 drachms—and the compound ipecacuanha powder, commonly known as *Dover's Powder* (q.v.). To produce the full effect as a sudorific, a dose of ten grains of Dover's powder should be followed by copious draughts of white-wine

whey, treacle-posset, or some other warm and harmless drink.

IPHIGENIA, *ĭf-ĭ-jē-nī'a*, in Grecian Legend: daughter of Agamemnon and Clytemnestra; or, according to others, adopted daughter of Clytemnestra. Her father, having offended Diana, vowed to make atonement by sacrificing to the goddess the most beautiful thing born within the year. This happened to be Iphigenia. Agamemnon long delayed the fulfilment of his vow, but at length the Trojan expedition drew on, and the Greek fleet being detained in Aulis by a calm, the seer Calchas declared that Agamemnon must keep his promise. When Iphigenia was brought to the altar, however, she disappeared, and a hind lay there in her stead, Diana herself having carried her off in a cloud to Tauris, where she became her priestess, but was afterward happily recognized by her brother, Orestes, who had come to seek her and whom she as priestess was about to slay as a sacrifice as the custom was with all strangers. Orestes carried her, with the image of Diana, to Attica. Various incidental points connected with this legend show Iphigenia to have been originally a form of Diana or Artemis. The legend is of post Homeric origin. It has, however, been much wrought into Grecian poetry, and afforded many subjects to painters and sculptors. In modern literature, it has been employed with great genius and poetic art by Goethe in *Iphigenia auf Tauris.*

IPOMÆA, *ĭp-o-mē'a:* genus of plants of nat. ord. *Convolvulaceæ*, differing very little from the genus *Convolvulus.* The species are numerous. They mostly are natives of warm countries. Some are often seen in flower-gardens and hot-houses, being very ornamental, and readily covering trellises with their twining stems, large leaves, and large beautiful flowers. The roots of some of them yield a resinous substance, with properties resembling those of jalap, and the true Jalap (q.v.) plant itself has sometimes been referred to this genus.

IPSAMBUL. See ABOUSAMBUL.

IPSE DIXIT, *ĭp'sĕ dĭks'ĭt* [L. he himself said it]: on his sole assertion—said of a piece of dogmatism. *Note.*—The phrase is said to have been originally used by the Peripatetics in quoting Aristotle.

IP'SICA. See MODICA.

IPSISSIMA VERBA, phrase, *ĭp-sĭs'sĭ-ma vėr'ba* [L.]: the very words; the exact words or terms.

IPSO FACTO, phrase, *ĭp'sō făk'tō* [L.]: by the very act or fact.

IPSWICH, *ĭps'wĭch:* town in Essex co., Mass.; at the mouth of Ipswich river and on the eastern division of the Boston and Maine railroad; 3 m. from the Atlantic ocean, 27 m. n.n.e. of Boston. It is on both sides the river.

which is here crossed by two stone bridges; has an excellent bay and harbor; and contains manufactories of woolen goods, hosiery, boots and shoes, soap, silk, and isinglass, high, classical, and grammar schools, young ladies' seminary, public library, insane asylum, house of correction, churches, and a savings bank. It was settled by John Winthrop 1633, Mar., and for many years was the co. seat. The first meeting-house was erected 1634, the first public school opened 1642, and its first classical school founded 1650. Pop. (1910) 5,777.

IPSWICH: market-town, parliamentary and municipal borough, and river-port of England, cap. of the county of Suffolk; agreeably situated on the river Orwell, at the foot of a range of hills, 68 m. n.e. of London. The older portions of the town consist of narrow and irregular streets, some of the old houses of which are ornamented with curious carved work. It contains numerous churches and benevolent institutions, a town-hall, a mechanics' institution, with about 700 members; and a Working Men's College, with 200 members. Of its educational establishments, the principal is the grammar-school, founded by Cardinal Wolsey, and endowed by Queen Elizabeth; it has an income from endowment of £116 6s. 8d., has six scholarships, exclusive of an Albert scholarship founded as a memorial of the late Prince Consort, and two exhibitions at Pembroke College, Cambridge. There are large iron and soap factories, breweries, corn-mills, and ship-building docks. The exports are chiefly agricultural produce, and agricultural implements and machinery; imports, wine, coal, iron, and timber. The town can be reached by vessels of 500 tons. It sends two members to parliament. Pop. 66,622. Ipswich was pillaged by the Danes 991, and again 1000.

IPS'WICH: second town in importance in state of Queensland, Australia; on the Bremer river, 25 m. w. of Brisbane. It is the terminus of the s. and w. railroad systems; became a municipality 1860; contains numerous churches, chapels, and grammar-schools, hospital, mechanics' institute with valuable library, and two newspapers; has extensive coal mines; and carries on a large general trade. Pop. 15,246.

IQUIQUE, *e-kē'kā:* seaport and cap. of the province of Tarapaca, formerly belonging to Peru but since 1883 to Chili; lat. 20° 12′ s. Ever since the discovery of apparently inexhaustible beds of nitrate of soda in its vicinity, it has been the most important seaport of Peru after Callao, the average monthly receipts at its custom-house exceeding $400,000. Nearly 300,000 tons of nitrate of soda are annually exported from Iquique, Mejillones, Junin, and Pisaqua, and from 60 to 70 tons of iodine from the factories of Iquique alone. The town was almost totally destroyed by fire 1875, and by a

IRELAND.
SCALE OF STATUTE MILES.
0 5 10 20 30 40 50 60
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R., MC N. & CO., ENGR'S, 6° CHI.
Longitude West from Greenwich.
A
10°
B
9°
C
8°
D
7°
E
6°
F
1
2
3
4
5
55°
54°
53°
52°
NORTH CHANNEL
IRISH SEA
ST. GEORGE'S CHANNEL
ATLANTIC OCEAN
ULSTER
CONNAUGHT
LEINSTER
MUNSTER
BELFAST
DUBLIN
CORK
Galway Bay
Donegal Bay
Sligo Bay
Dingle B.
Bantry Bay
Lough Neagh
Lough Foyle
Lough Swilly
L. Derg
L. Corrib
L. Mask
Upper L. Erne
Lower L. Erne
Lakes of Killarney
Malin Head
Tory I.
Achill Head
Clare I.
Aran Is.
Loop Head
Kerry Head
Mizen H.
C. Clear
Carnsore Pt.
Wicklow Head
Howth
Londonderry
Limerick
Galway
Waterford Harbor
Wexford Harbor
Kingstown
Queenstown
Kinsale
Youghal
Tipperary
Kilkenny
Athlone
Mullingar
Drogheda
Dundalk
Newry
Armagh
Enniskillen
Sligo
Castlebar
Westport
Ennis
Tralee
Killarney
Clonmel
Wexford
Wicklow
Carlow
Maryborough
Tullamore
Longford
Roscommon
Cavan
Monaghan
Omagh
Lisburn
Coleraine
Larne

series of earthquakes which caused a damage of $4,000,000) 1877, and with the whole province passed to the possession of Chili by treaty after the close of the war between Peru and Bolivia and Chili 1880–1. Since the earthquakes it has been rebuilt more substantially, and become a thoroughly cosmopolitan town. Pop. 33,031.

IRADE, n. *ĭ-râd′ē* [Turk.]: in *Turkey,* an imperial decree; the form of a decree.

I-RAIL, n. *ī′rāl:* double-headed rail with a flange on each side above and below, on the foot and on the tread; hence the cross-section is like a capital I. I-BEAM.

IRAK-AJEMI, *ē-râk′âj′ĕh-mē:* large province of Persia, bounded n. by the provinces of Azerbijan, Ghilan, and Mazanderan; e. by Khorasan. On the s. and w., the boundaries are not definite. In the extreme n. are the Elburz Mountains, and throughout the province are several other chains, all extending from s.e. to n.w. A great portion of the surface of the province consists of elevated table-lands, but there are also numerous fertile valleys traversed by rivers. Many of the rivers of Irak-ajemi are swallowed up by sandy tracts into which they flow. The chief towns of the province are the capital Teheran and Ispahan.

IRAK-ARABI, *ē-râk′âr′a-bē,* or IRAK EL ARABI, *ē-râk′ ĕl âr′a-bē:* district in Turkey in Asia, the ancient Babylonia (q.v.), comprising the ruins of the ancient cities of Babylon, Selucia, and Ctesiphon. During the last 250 years of the caliphate, this was the poor remnant of their once wide dominion which remained to the successors of Mohammed.

IRAN, *ē-rân′:* modern native name of Persia. See AYRAN (Race); PERSIAN LANGUAGE AND LITERATURE.

IRANIAN, a. *ī-rā′nĭ-ăn* [*Iran,* the name given to Persia by its people]: of or relating to Persia: also IRANIC. See IRAN.

IRASCIBLE, a. *ī-răs′sĭ-bl* [Sp. and F. *irascible;* It. *irascibile,* irascible—from mid. L. *īrascĭb′ĭlĭs*—from L. *īras′cī,* to be angry (see IRE)]: easily provoked; prone to anger; irritable. IRAS′CIBLY, ad. *-blī.* IRAS′CIBLENESS, n. *-bl-nĕs,* or IRAS′CIBIL′ITY, n. *-bĭl′ĭ-tĭ,* the quality of being easily inflamed by anger.

IRAWAD′I. See IRRAWADDY.

IRE, n. *īr* [F. *ire,* anger—from L. *īrā:* AS. *yrre,* anger; Fin. *ari,* snarling like a dog: Dan. *irre,* to tease, to incite]: anger; wrath. IRATE, a. *ī-rāt′,* angry, enraged. IRE′FUL, a. *-fûl,* filled with anger. IRE′FULLY, ad. *-lĭ.*—SYN. of 'ire': passion; choler; rage; resentment; fury.

IREDELL, *īr′dĕl,* JAMES: 1751, Oct. 5—1799, Oct. 20; b. Lewes, England: lawyer. He removed to Edenton, N. C., 1768, was admitted to the bar 1770, was deputy collector and collector of the port of Edenton several years, became judge of the superior court of N. C. 1777,

attor.-gen. 1779, commissioner to compile and revise the state laws 1787, and associate justice of the U. S. supreme court 1790. His son, JAMES IREDELL, Jr.: 1788, Nov. 2—1853, Apr. 13; b. Edenton: lawyer; served many years in the state legislature, was speaker of the house and judge of the superior court, elected gov. of N. C. 1827, and U. S. senator 1828; was many years reporter of supreme court decisions, took part in collecting and revising the laws of N. C., and published *Treatise on the Law of Executors and Administrators*, and *Digest of all the Reported Cases in the Courts of North Carolina*, 1778 *to* 1845 (Raleigh, 1839–46).

IRELAND, *īr'land:* island, forming part of the United Kingdom of Great Britain and Ireland; lat. 51° 26′—55° 23′ n. and long. 5° 20′—10° 26′ w. It is washed on the n.w. and s. by the Atlantic; and on the e. by a strait, called at different places the North Channel, the Irish Sea, and St. George's Channel, which separates it from the larger island of Great Britain. Its greatest length, from Fair Head in Antrim to Crow Head in Kerry, is 306 m., but its greatest meridional length is not more than 225; its greatest breadth, between the extreme points of Mayo and Down, is 182 m., but between Galway Bay and Dublin, it is not more than 120. Ireland is divided into the four provinces of Ulster, Leinster, Munster, and Connaught; which are subdivided into 32 counties. Area, about 32,583 sq. m., of which 15,464,825 acres are arable land; 4,357,338 acres are uncultivated; 339,858 are covered with wood; 49,236 are occupied by towns of 2,000 inhabitants and upward; while the lakes and waters cover 627,464 acres. The population in 1901 was as follows:

Leinster.—Carlow (37,723); Dublin (447,266); Kildare (63,469); Kilkenny (78,821); King's (60,129); Longford (46,581); Louth (68,741); Meath (67,463); Queen's (57,417); Westmeath (61,527); Wexford (103,860); Wicklow (60,678.); Total 1,150,136.

Munster.—Clare (112,334); Cork (404,813); Kerry (165,391); Limerick (146,018); Tipperary (159,754); Waterford (87,030). Total 1,075,340.

Ulster.—Antrim (428,128); Armagh (125,238); Cavan (97,541); Donegal (173,625); Down (289,335); Fermanagh (65,243); Londonderry (144,329); Monaghan (74,505); Tyrone (150,468). Total 1,548,239.

Connaught.—Galway (192,146); Leitrim (69,201); Mayo (202,627); Roscommon (101,639); Sligo (84,083). Total 649,696. Grand total 4,423,411.

*Physical Aspect.*—Ireland is of oblong form, and like Great Britain, the e. coast is comparatively unbroken, while the w., n., and s. are deeply indented. It is an undulating or hilly country—less rugged than the Highlands of Scotland, and not so tame as the eastern portion of England. Its hills are more rounded than abrupt, and not so much in ranges as in detached clusters round

the coasts. These hilly tracts rarely extend more than 20 m. inland, and they seem to form a broad fringe round the island; while the interior appears as a basin composed of flat or gently swelling land. The principal ranges are the Mourne Mountains in Down, which attain their highest elevation in Slieve Donard, 2,796 ft. above the sea; the mountains of Wicklow, 3,039 ft.; and Macgillicuddy Reeks in Kerry, which, in the peak of Carran-Tual, the loftiest point in Ireland, reach 3,414 ft. The purely flat or level portions of the island, except some fine tracts of fertile valley-land in Kilkenny, Tipperary, and Limerick, consist mainly of *bog* or morass, which occupies, according to Dr. Kane, 2,830,000 acres, or about a seventh part of the entire superfices. The largest of these morasses is the Bog of Allen, which stretches in a vast plain across the centre of the island, or over a large portion of Kildare, Carlow, King's, and Queen's counties—having a summit elevation of 280 ft. (see ALLEN, BOG OF). Extensive tracts of deep wet bog occur also in Longford, Roscommon, and other counties, and give a peculiarly dreary and desolate aspect to the scenery. Notwithstanding the quantity of water in these bogs, they exhale no miasma injurious to health, owing to the large quantities of tannin which they contain.

*Hydrography.*—The principal river of Ireland, and the largest in the United Kingdom, is the Shannon (q.v.). The streams which drain the e. part of the central plain are the Liffey and the Boyne; the s.e. part, the Suir, the Barrow, and the Nore; while the waters of the n.e. part are collected into Lough Neagh, chiefly by the Blackwater, and thence discharged into the sea by the Lower Bann. The rivers *external* to the great central plain are necessarily short. The principal are the Erne, flowing n.w.; the Foyle and the Bann, n.; the Lagan, n.e.; the Slaney, s.e.; and the Bandon, Lee, and Blackwater, flowing eastward through the county of Cork, the most southern county in the island. None of these rivers are naturally of importance to navigation. The Shannon, however, has been made navigable to its source by means of locks and lateral cuts; the Barrow, by similar means, to Athy; the Foyle, by canal, to Strabane; and several of the others have been artificially united by such lines as the Lagan, Newry, Ulster, Royal, Grand, Athy, and other canals—which now intersect a considerable portion of the island.

The lakes of Ireland (called loughs) are, as might be expected from the surface-character of the country, both numerous and extensive in proportion to the size of the island. The largest is Lough Neagh in Ulster, 100,000 acres. The other loughs of consequence are Loughs Erne and Derg, also in Ulster; Conn, Mask, and Corrib, in Connaught; the Allen, Ree, and Derg, expansions of the river Shannon, and the lakes of Killar-

ney (q.v.) in Kerry. The bays and saltwater loughs which indent the island are numerous and of importance. About 70 are suitable for ordinary purposes of commerce; and there are 14 in which the largest men-of-war may ride in safely. The principal are Loughs Foyle and Swilly, on the n. coast; the Bays of Donegal, Sligo, Clew, and Galway, the estuary of the Shannon, Dingle Bay, and Bantry Bay, on the w.; the harbors of Cork and Waterford, on the s.; Wexford harbor, the Bays of Dublin, Drogheda, and Dundalk, and Loughs Carlingford, Strangford, and Belfast, on the e.—The islands are generally small and of little importance. On the e. coast, the largest is Lambay, about 2½ m. off the coast of Dublin; on the s. and s.e. coasts are Clear Island, the Saltees, a group of islets dangerous to navigators, about 8 m. s. of the Wexford coast, indicated by a floating light, and Tuscar Rock, about 8 m. e. of Carnsore Point, also a dangerous ledge, 20 ft. above the sea, and surmounted by a light-house after the model of the Eddystone; on the w. coast, the Skelligs, Valentia, the Blaskets, the South Arran Isles, Innisbofin, Innisturk, and Clare Achil or 'Eagle' Island, and the Inniskea Islets; on the n. coast, the North Arran Isles, the Tory Isles, and Rathlin.

*Geology.*—A great series of grits and slates of Cambrian age occur in the s.e. of Ireland; the upper portion contains a few fossils of zoophites and worms. Lower *Silurian strata* rest unconformably on the Cambrian rocks in the same district. They consist of flags, slates, and grits many thousand feet in thickness, extending over large portions of Kildare, Wicklow, Wexford, and Waterford. Several detached patches occur w. of this district, forming the Keeper, Arra, and Inchiquin Mountains. A tract of similar beds stretches from the centre of Ireland, near the source of the Shannon, to the coast of Down. The strata in proximity to the Wicklow and Dublin granites are converted into gneiss and mica-slate. This is the condition of all the beds in the n.w. in Donegal, Tyrone, and Mayo; they appear to be a continuation of the highly altered strata of n. Scotland. Detached portions of Upper Silurian measures occur on the w. side of the island, in Kerry, Galway, and Mayo.

Between the Silurian and Old Red Sandstone is an enormous thickness (11,000 ft.) of sandstone grit and shale in Kerry and Cork. These strata are almost wholly unfossiliferous.

*Old Red Sandstone* strata, consisting of red and yellow sandstone and slate, cover a large tract of the s. of Ireland, stretching almost continuously from the extreme w. of Cork and Kerry into Waterford and Kilkenny, being stopped by the Silurian rocks of Wexford and Carlow. Along the bases of the Silurian mountains of the s. centre of Ireland, and in the s. portion of the county of Cork, occurs a great thickness of sandstones,

which have hitherto yielded no fossils; some geologists refer these to the Old Red series, others class them as Lower Carboniferous.

The *Carboniferous Limestone* is extensively developed in Ireland, occupying the whole of the centre of the country, except in those places above alluded to, where the older rocks appear on the surface. This great tract is an extensive plain covered with drift, and with peat-moss and freshwater marl, in which are found the remains of *Megaceros Hibernicus* and *Bos longifrons*. In Kerry, Cork, and Waterford the strata are very much contorted, the coalseams are changed into anthracite, and so squeezed and crushed as to be got only in small dice-like fragments. Further n., the strata are nearly horizontal, but the coalfields are limited, and the seams generally of inconsiderable thickness; they occur chiefly in Tipperary, Kilkenny, Tyrone, and Antrim.

Small deposits of *Permian strata* are found at Ardtrea in Tyrone, and at Cultra near Belfast; the sandstones of Roan Hill, near Dungannon are probably of the same age. The red and variegated marls containing beds of gypsum and rock-salt, on the coast n. from Belfast, are probably *Triassic*. Resting on these marls are a few thin beds of *Lias*. *Cretaceous* strata occur in Antrim and Derry.

*Climate.*—Though the climate of Ireland bears, as might have been expected, a strong resemblance to that of Great Britain (q.v.), it has yet a peculiar character, owing to the marked difference in the configuration of its surface, its greater distance from the continent of Europe, and its being more completely bathed in the warm waters of the Gulf Stream. The mean annual temperature of the central parts of the country is about 50°·0, rising in the s. to 51°·5, and falling in the n. to 48°·5. There are thus 3°·0 of difference between the extreme n. and s., and it may be noted that, speaking generally, this difference is constant through all seasons of the year. The mean temperature in winter is 41°·5; in spring, 47°·0; in summer, 60°·0; in autumn, 51°·0;

The annual rainfall averages 25 to 28 inches, except in the neighborhood of hills, where the precipitation is considerably augmented; thus, at Valentia, in Kerry, the rainfall of 1861 amounted to 73 inches, and doubtless this large fall was greatly exceeded in places among the higher hills. The rainfall in winter, particularly in the w., is greatly in excess of the other seasons, owing to the low temperature of the surface of the ground during winter, which suddenly chills the warm and moist s.w. winds that prevail, especially at this time of the year, and condenses their vapor into rain. Since in Great Britain the chief mountain ranges are in the w., it follows that over the whole e. slope of that island the climate is drier, the amount and frequency of the rainfall much less, and the sunshine more brilliant

than in the w. In Ireland, on the other hand, the hills in the w. do not oppose such a continuous barrier to the progress of the s.w. winds, but are more broken up and distributed in isolated groups. It follows that the sky is more clouded, and rain falls more frequently in Ireland, and the climate is thus rendered more genial and fostering to vegetation; hence the appropriateness of the name 'Emerald Isle.' Again, owing to its greater distance from the continent, the parching and noxious e. winds of spring are less severely felt in Ireland, because the n.e. winds have acquired more warmth and moisture in their progress. On this account the most salubrious spring climates in England, Scotland, and Ireland are in the s.w. of the respective countries. Thus, Queenstown, in the s.w. of Ireland, has an average spring temperature as high as 50°·0, which is about the highest in the British Islands, and nearly 3°·0 higher than the e. of Kent, nearly in the same latitude.

Since wheat ripens in these latitudes with a mean summer temperature of 56°·0, it follows that the climate of Ireland is adequate to the successful cultivation of the finer sorts of grain, which are subjected to much less risk in backward seasons than is the case in n. Britain, where the summer temperature is only a degree and a half from the extreme limit of wheat-cultivation. Also, considering its remarkably open winters, which lengthen out the period of grazing, its mild and genial climate through all the seasons, and its comparative freedom from droughts, it will be seen that its climate is equally well adapted for rearing of cattle. These considerations, combined with the fertility of the soil, open for Ireland, as far as the physical conditions are concerned, a prospect of national prosperity, based on remarkable, though as yet only partially developed agricultural resources.

*Agriculture.*—Until the middle of last century, Ireland was almost exclusively a pasturing country. The result of this state of things is the wretchedly poor system of agriculture, from which Ireland still suffers largely. The extreme smallness of the large majority of farms, the lack of capital, insecurity of tenure, and the fear that rents would be raised if improvements were made by the tenants, have kept the agriculture of Ireland in a very backward condition. It is to be hoped that new arrangements in the direction indicated by the Land Act of 1881 may bring better relations between landlord and tenant, and promote agricultural progress.

The number of acres devoted to various crops in 1902 was as follows: cereals 1,306,398; green crops 1,070,449; flax 49,746; clover and grass 1,228,498; pasture 11,575,592. There has been a large decrease in the area sown with corn and green crops, and a corresponding increase in the area devoted to clover, grass, and pastures. Oats, barley, and wheat, in the order

named, are the principal cereals grown. Under green crops are included potatoes, turnips, cabbages, carrots, vetches, and similar crops. The extent of land set apart for potatoes, the staple food of the peasantry, has decreased largely. In 1902 the number of farm animals stood as follows: horses, 509,284; cattle, 4,785,204; sheep 4,215,740; pigs, 1,372,592.

*Fisheries.*—In fisheries, Ireland is supposed to possess an almost inexhaustible mine of wealth; but they are strangely neglected. The surrounding seas abound with cod, ling, hake, herrings, pilchards, etc., and the rivers with salmon; yet the Irish markets are extensively supplied with cured fish from Scotland and the Isle of Man. The number of vessels and boats engaged in the sea-fisheries (1846) was 20,000, employing 100,000 men and boys; in 1861 the fisheries employed 12,035 boats manned by 48,000 men, and in 1906 only about 30,000 men were so engaged, the decrease being due in some measure to emigration and the demand for seamen, but chiefly to the distance of the most productive fishing-grounds from the centres of population. The total value of salmon exported is about $700,000 to $950,000 annually.

*Manufactures.*—According to M'Culloch, 'Ireland is not, and never has been, a manufacturing country. Its unsettled turbulent state, and the general dependence of the population on land, have hitherto formed insuperable obstacles to the formation of great manufacturing establishments in most parts of the country; while the want of coal, capital, and skilful workmen and the great ascendency of England and Scotland in all departments of manufacture, will, there is reason to think, hinder Ireland from ever attaining eminence in this department.' Linen is the staple manufacture, of which Belfast and the surrounding districts of Ulster are chief seats. The manufacture of woolen stuffs is limited to a few localities, as Dublin, Cork, Waterford, Queens county, and Kilkenny. Silk and cotton manufactures also are carried on, but only to an inconsiderable extent. In the 17th century the woolen manufactures of Ireland were in a flourishing condition, producing principally frieze and flannel, but prohibitive and restrictive governmental methods almost destroyed the industry before the end of the century. A great source of employment for women has of late years sprung up in the north of Ireland, in the working of patterns on muslin with the needle. Belfast is the centre of this manufacture, which employs about 300,000 persons, chiefly women and girls, scattered through all the counties of Ulster, and places in the other provinces. About 40 firms are in the trade, and the gross value of the manufactured goods amounts to about £1,400,000. Silk manufactures, since their introduction by French emigrants in the beginning of the last century, have been almost confined to Dublin; but

poplin is now extensively manufactured there, and in a few other towns.

*Commerce and Shipping.*—The exportation of the agricultural produce of the country has always been the chief commercial business carried on in Ireland. By far the greater part of this trade is with Great Britain. It cannot, however, be traced later than 1825, when the commercial intercourse between Great Britain and Ireland was assimilated by law to the coasting traffic between the different ports of England, except in the single article of grain. The value of the exports direct from Ireland to foreign ports was about $4,533,090 in 1883, of imports from foreign parts $53,166,620, in 1900 they were $6,560,240 and $50,072,985, respectively. In 1900 the number of vessels entered from the colonies and foreign parts was 1,048 (1,032,109 tons); and cleared 448 (473,758 tons); entered coastwise 31,069 (6,401,172 tons); cleared 31,026 (6,746,328 tons).

*Government.*—Ireland, by the Act of Union, became an integral part of the United Kingdom, and shares in its legislation by means of 28 representative peers in the House of Lords, and 103 representatives in the House of Commons. The representative peers are elected for life by the whole body of Irish peers. The Lord-Lieutenant, who represents the sovereign, holds his court in the castle of Dublin. Since 1898 great changes have been made in the manner of administering the local government. Previous to that date the chief authority in the county was the grand jury, and all local affairs pertaining to the government and local laws were attended to by the grand juries and presentment sessions. The act of 1898 provides for a council, elected by the people, for a term of three years. The government of the boroughs, rural and urban districts, is also vested in an elective council. The unincorporated boroughs are governed by commissioners.

The government of the incorporated boroughs is vested in a mayor, aldermen, and council. The large cities are now county boroughs. The chief secretary, the under-secretary, and four commissioners, who are appointed by the Lord-Lieutenant, constitute the local government board, which has supervisory authority over the local council. This board approves or rejects nominations made by the local authority, decides upon salaries, and has the whole local government in charge to a certain extent.

The judiciary of Ireland is similar in many respects to that of England. The highest tribunal is the Supreme Court of Judicature, composed of the High Court of Justice and the Court of Appeal. Other courts are the Court of Bankruptcy, the Land Commissioner's Court, and the High Court of Admiralty. The English municipal law is administered by the courts of Ireland.

*Religion.*—A vast majority of the inhabitants of Ire-

land are Rom. Catholics; but the Episcopal Church, a branch of the Church of England, was the Established Church till 1871, Jan. It now exists independently as the Church of Ireland. According to the census of 1901 there were in Ireland 3,310,028 Roman Catholics, 579,385 Protestant Episcopalians, 443,494 Presbyterians, 61,255 Methodists, and 56,703 members of other persuasions, besides 3,769 Jews.

*Education.*—Dublin University (q.v.) was founded 1591; the Royal University of Ireland, substantially an examining board like London Univ., where degrees are open to all comers, was founded by royal charter 1880, and supersedes the Queen's Univ., to which the Queen's colleges of Belfast, Cork, and Galway (opened 1849) were subordinate. The Queen's Colleges were formerly connected with an examining and degree-conferring body Queen's University, for which the Royal University of Ireland was substituted in 1882, in pursuance of the University Education (Ireland) Act, 1879; $100,000 being yearly granted from the surplus funds of the Irish Church (q.v.). The Queen's Colleges, however, are not directly affected by this act. The Royal College of Science for Ireland was established under the authority of the Science and Art Department, London, in August, 1867. Its object is to supply a complete course of instruction in science applicable to the industrial arts, and to aid in the instruction of teachers for the local schools of science. There are also the General Assembly's Theological College, Belfast; the Magee College, Londonderry, a Presbyterian college opened in 1865, and embracing in its curriculum literature, science, and theology; the College of St. Columba, near Dublin, founded for the purpose of establishing a system of instruction preparatory to the university.

The Catholic University of Ireland, established in 1854, grants degrees in theology and philosophy, and since 1882 sends its students to the Royal University for examinations for degrees in arts, medicine, law, and engineering. Affiliated with the Catholic University, and now a part of it, are the following colleges: St. Patrick's, Maynooth; University College, Dublin; University College, Blackrock; St. Patrick's, Carlow; Holy Cross, Clonliffe; and School of Medicine, Dublin. There are additional, in different cities and towns, about 40 Roman Catholic colleges and seminaries for men, and a large number of academies or secondary schools for women. There are numerous non-sectarian schools, some of them of royal and private foundation and endowed, but the most prominent are those established since 1831 under the superintendence of the commissioners of national education. Of these schools there were 8,670 in operation in 1899, with 785,139 pupils on the rolls. The average daily attendance was small, being only 513,852. In 1892 an act was passed by which a beginning was made of

free education, and a modified system of compulsion. In 1878 an act was passed for the promotion of the intermediate secular education of boys and girls in Ireland. By this act about $5,000,000 from the Irish Church surplus fund was set apart, being invested in commissioners who are to apply the revenue arising from it to the purposes of the act. The schools referred to in the act are of a grade superior to the national schools.

Considerable attention is given to technical instruction. In all the convent schools the young girls have regular courses in domestic science, and in several trades are taught. The Department of Agriculture and Technical instruction has an advisory board of technical instruction. In 1901–2 the course of experimental science had been adopted in 152 schools with 6,412 science pupils. The central institutions belonging to this department are the Royal College of science, Dublin, and the Metropolitan School of Art. Throughout the provinces the work is being organized by the councils of county boroughs, urban districts, and counties. The annual grant for the technical instruction is $25,895,000 .

*History.*—Ireland seems before the dawn of history to have been peopled by Iberian or pre-Aryan tribes, like other parts of w. Europe. Irish legends record the successive invasions of five races, including Nemedians, Firbolgs, Tuatha De Danann, and Milesians—all apparently Celtic, and the Milesians being presumably the Scots. Although Ireland styled *Iernis*, is mentioned in the Greek poem five centuries before Christ, and by the names of *Hibernia* and *Juverna* in various foreign pagan writers, little is known with certainty of her inhabitants before the 4th c. after Christ, when, under the appellation of *Scoti*, or inhabitants of *Scotia*, they became formidable by their descents on the Roman province of Britain. These expeditions were continued and extended to the coasts of Gaul till the time of Laogaire MacNeill, monarch of Ireland (A.D. 430), in whose reign St. Patrick (q.v.) attempted the conversion of the natives. Although Christianity had been previously introduced in some parts of the island, St. Patrick encountered great obstacles, and the new faith was not fully established in Ireland till about a century after his decease.

From the earliest period, each province of Ireland appears to have had its own king, subject to the *Ard-Righ* or monarch, to whom the central district called Meath was allotted, and who usually resided at Tara. Each clan was governed by a chief selected from its most important family, and who was required to be of mature age, capable of taking the field efficiently when occasion required. The laws were peculiar in their nature, dispensed by professional jurists styled *Brehons*, who, as well as the poets and men of learning, received high consideration, and were endowed with lands and

important privileges. Cromlechs, or stone tombs and structures, of large uncemented stones, ascribed to the pagan Irish, still are seen in various parts of Ireland. Lacustrine habitations, or stockaded islands, styled *Crannógs* (q.v.) or *Crannoges*, in island lakes, also appear to have been in use there from early ages. Of articles of metal, stone, clay, and other materials in use among the ancient Irish, a large collection has been formed in the Museum of the Royal Irish Acad. at Dublin. It is remarkable that a greater number and variety of antique golden articles of remote age have been found in Ireland than in any other part of n. Europe; and the majority of the gold antiquities illustrative of British history, now preserved in the British Museum, are Irish.

In the 6th c., extensive monasteries were founded in Ireland, in which religion and learning were zealously cultivated. From these establishments, numerous missionaries issued during the succeeding centuries, carrying the doctrines of Christianity under great difficulties into the still pagan countries of Europe, whose inhabitants they surprised and impressed by their self-devotion and asceticism. Many students of distinction from England and the continent frequented Ireland and received gratuitous instruction at this period. To these ages has been ascribed the origin of the peculiar style of art-ornamentation, specimens of which are extant in Irish manuscripts, and which was long erroneously assigned to the Anglo-Saxons, who now appear to have been indebted to the Irish mainly for Christianity, and entirely for letters. Among the eminent native Irish of these times were Columba (q.v.), or Colum Cille, founder of the celebrated monastery of Iona; Comgall, who established the convent of Bangor, in the county of Down; Ciaran of Clonmacnoise; and Adamnan (q.v.), abbot of Iona, and biographer of Columba. Of the Irish missionaries to the continent, the more distinguished were Columbanus (q.v.), founder of Bobio; Gallus of St. Gall, in Switzerland; Dichuill, patronized by Clotaire; and Ferghal, or Virgilius, evangelizer of Carinthia. The progress of Irish civilization was checked by the incursions of the Scandinavians, commencing toward the close of the 8th c. and continuing more than 300 years. Establishing themselves in towns on the e. coast of Ireland, with the assistance of friendly native tribes, the Scandinavians continued to make predatory expeditions into the interior until their signal overthrow at the battle of Clontarf, near Dublin (1014), by Brian, surnamed Borumha, monarch of Ireland. From the close of the 8th to the 12th c., Ireland, though harassed by the Scandinavians, produced many writers of merit, among whom were Ængus, hagiographer; Cormac MacCullenan, King of Munster and Bishop of Cashel, reputed author of *Cormac's Glossary;* Cuan O'Lochain; Gilla Moduda; Flan of Monasterboice; and Tighernach, annalist. The

Irish scholars who during this time acquired highest eminence on the continent were Joannes Erigena, favorite of Charles the Bald of France; Dungal, one of the astronomers consulted by Charlemagne; Dichuill, geographer; Donogh, or Donatus, Pp. of Fiesole; and Marianus Scotus. Of the state of the arts in Ireland during the same period, elaborate specimens remain in the shrine of St. Patrick's bell, the Cross of Cong, in Mayo (12th c.); the Limerick and Cashel crosiers, and the Tara brooch, all displaying minute skill and peculiar style. To much earlier times is assigned the *Book of Kells* (see KELLS), a Latin copy of the four Gospels, in the library of Trinity College, Dublin, which Westwood has pronounced the most elaborately executed manuscript of early art now in existence, and of portions of which facsimiles are given in his work *Palæographia Sacra Pictoria*. Of the Irish architecture of the period, examples remain at Cashel. The well-known round towers of Ireland are believed to have been erected about this era as belfries, and to serve as places of security for ecclesiastics during disturbances. The skill of the Irish musicians in the 12th c. is attested by the enthusiastic encomiums of Giraldus Cambrensis on their performances. The Scandinavians left in Ireland no traces of civilization except coins struck at Dublin, Waterford, and Limerick, in which towns they were mostly subject and tributary to the natives.

The first step toward an Anglo-Norman descent upon Ireland was made by Henry II., who obtained, 1155, a bull from Pope Adrian IV., authorizing him to take possession of the island, on condition of paying to the papal treasury a stipulated annual revenue. Political circumstances prevented Henry from entering on the undertaking till 1166, when Dermod MacMurragh, the deposed king of Leinster, repaired to him, and obtained authority to enlist such of his subjects as might be induced to aid him in attempting to regain his forfeited lands. Dermod, returning to Ireland, 1169, with the aid of his foreign mercenaries, and still more numerous Irish allies, succeeded in recovering part of his former territories, and in capturing Dublin and other towns on the e. coast. After his death 1171, the succession to the kingdom of Leinster was claimed by his son-in-law, Richard FitzGislebert, Earl of Pembroke, surnamed 'Strongbow.' In the following year, King Henry, with a formidable armament, visited Ireland, received homage from several minor native chiefs, and from the chief adventurers, granting to the latter charters authorizing them, as his subjects, to take possession of the entire island, in virtue of the grant made to him by the pope. The chief Anglo-Norman adventurers, FitzGislebert, Le Gros, De Cogan, De Lacy, and De Curci, encountered formidable opposition before they succeeded in establishing themselves on the lands which they thus claimed.

The government was committed to a viceroy, and the Norman legal system was introduced into such parts of the island as were reduced to obedience to England. The youthful Prince John was sent by King Henry into Ireland 1184; but the injudicious conduct of his council having excited disturbances, he was soon recalled to England. John, when king, made an expedition into Ireland 1210, to curb the refractory spirit of his barons, who had become formidable through their alliances with the natives. During the 13th c., the principal Anglo-Norman adventurers succeeded in establishing themselves, with the feudal institutions of their nation, in some parts of Ireland, by the assistance or suppression of native clans. The Fitzgeralds, or Geraldines, acquired almost unbounded power in Kildare and East Munster, or Desmond; the Le Botillers, or Butlers, in Ormond or West Munster; and the DeBurghs, or Burkes, in Connaught. After the battle of Bannockburn, the native Irish of the north invited over Edward Bruce, and attempted to overthrow the English power in Ireland. The see of Rome, at the instigation of England, excommunicated Bruce with his Irish allies; but though his enterprise failed of success, the general result was a comparative collapse of the English dominion in Ireland. The descendants of the most powerful settlers gradually became identified with the natives, whose language, habits, and laws they adopted to so great an extent, that the Anglo-Irish parliament passed, 1367, the 'Statute of Kilkenny,' decreeing excommunication and heavy penalties against all those who followed the customs of, or allied themselves with, the native Irish. This statute, however, remained inoperative; and though Richard II., later in the 14th c., made expeditions into Ireland with large forces, he failed to effect any practical result; and the power and influence of the natives increased so much, that the authority of the English crown became limited to a few towns on the coast, and the district termed 'the Pale,' comprising a small circuit about Dublin and Drogheda.

In 1534, Thomas Fitzgerald, son of the Viceroy of Henry VIII., revolted, but not meeting with adequate support from his Anglo-Irish connections, he was, after a short time, suppressed and put to death. Henry received the title of 'King of Ireland,' 1541, by an act passed by the Anglo-Irish parliament in Dublin; and about the same period, some of the native princes were induced to acknowledge him as their sovereign, and to accept peerages. The doctrines of the Reformation met little favor either with the descendants of the old English settlers or with the native Irish. About the middle of the 16th c., Shane O'Neil, prince of the most powerful ancient family of Ulster, attempted to suppress his rivals, and to assume the kingship of that province, in which he was eventually unsuccessful; but

after his death 1567, his successor received the title of Earl of Tirone from Elizabeth. The attempts of the English government in Ireland to introduce the Reformed faith and English institutions stirred up great dissensions in Ireland. Among the first to revolt was the Earl of Desmond, after whose death, 1583, his vast estates in Munster were parcelled out to English settlers. Soon after, the chief clans of Ulster took up arms; and in opposing them, the forces of Elizabeth, commanded by officers of high military reputation, encountered many reverses, the most serious of which was in 1598 at the battle of the Yellow Ford, near Armagh, where the English army was routed and its general slain. Philip III. of Spain, at the solicitation of the Irish chiefs, dispatched a body of troops to their assistance 1601, which, landing in the extreme s. instead of in the n., as had been expected, were unable to effect anything, and were constrained to surrender. Although Elizabeth was supported by numbers of native Irish, the northern chiefs, O'Neil and O'Donnell, held out till the queen's government came to terms with them 1603, recognizing them as Earls of Tirone and Tirconnell. In 1608, these noblemen, having apprehensions for their personal safety, quitted Ireland unexpectedly, and retired to the continent. Their withdrawal enabled James I. to carry out that project of parcelling out the north of Ireland to Scottish and English settlers, which is usually known as the 'Plantation of Ulster.' The Irish took advantage of the contentions in England to rise in insurrection (1641) and massacre the Protestants. It is believed that nearly 40,000 fell victims to their fury. The country continued in a state of anarchy till 1649, when Cromwell completely subdued it. At the Revolution, the native Irish generally took the part of James II.; the English and Scotch 'colonists' of William and Mary; and the war was kept up for four years (1688–92). From this time till 1778, history records little beyond the passing of penal statutes against the Rom. Catholics. In 1778, parliament relaxed the stringent pressure of these acts; but the widely spread disaffection which they caused gave birth to numerous societies, resulting in the rebellion of 1798, which was not suppressed till 1800. On Jan. 1 of the following year, the legislative union of Ireland with Great Britain was consummated, and from this period its history merges in that of Great Britain. But see also FENIAN; HOME RULE; LAND LEAGUE.

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IRE'LAND, ARMS OF: insignia variously given by early writers. In the reign of Edward IV., a commission appointed to inquire what were the arms of Ireland, found them to be three crowns in pale. It has been supposed that these crowns were abandoned at the Reformation, from an idea that they might denote the feudal sovereignty of the pope, whose vassal the king of England was, as lord of Ireland. However, in a MS. in the Heralds' College of the time of Henry VII., the arms of Ireland are blazoned azure, a harp or stringed argent; and when they were for the first time placed on the royal shield on the accession of James I., they were thus delineated: the crest is on a wreath or and azure, a tower (sometimes triple-towered) or, from the port, a hart springing argent. Another crest is a harp or. The national flag exhibits the harp in a field vert. The royal badge of Ireland as settled by sign-manual 1801, is a harp or, stringed argent, and a trefoil vert, both ensigned with the imperial crown.

IRE'LAND, CHURCH OF: branch of the Prot. Episc. Church of England established on an identical basis under the provisions of the act of union taking effect 1801, Jan. 1; and disestablished and disendowed by act of parliament 1869 taking effect 1871, Jan. 1. On its establishment the Church of Ireland was permitted to assume control of the property as well as the management of the dioceses and parishes of the early Rom. Cath. Church in Ireland, and through these means it soon became wealthy and powerful. From the start it had the opposition of the authorities of the Rom. Cath. Church, who protested against the govt. maintenance of a Prot. state church whose adherents constituted a very small proportion of the population of Ireland, while 77 per cent. of the population belonged to the Rom. Cath. Church. The assumption by the Church of Ireland of the right of succession to the property and functions of the mediæval Rom. Church was an additional cause of grievance. Legislation was frequently invoked to bring about disestablishment, and the first advantage gained by the opponents of the Church of Ireland was in 1833 when parliament reduced the number of its arch-

bishoprics from 4 to 2, and bishoprics from 18 to 10. These benefices had incomes estimated at $650,000 to $925,000. During the next 35 years a strong public opinion was developed against continuing the privileges of the Church of Ireland—which included the admission of its bishops into parliament as peers; and when (1868) Mr. Gladstone moved to disestablish the church, the house of commons adopted the resolution but the house of lords rejected it. This action was followed by a recommendation from the royal commissioners on the revenues and condition of the Church of Ireland for important reductions as to the benefices of the church. The church then held private endowments that had accumulated since 1660 amounting to $2,500,000, and had received in public endowments, state grants, and revenues $77,500,000. In 1869, Mar., Mr. Gladstone, who had become prime minister, introduced a new disestablishing and disendowing bill, which passed both houses of parliament, received the royal assent, and went into effect 1871, Jan. 1. The bill provided for the appointment of a board of commissioners of church temporalities in whom should be vested the whole property of the Church of Ireland, with provisions for the future retention by the state of public endowments, grants, and revenues, the retention by the disestablished church of its private endowments, and compensation to various vested interests, including Maynooth College, the *regium donum* of the Presbyterians, and the incumbents of benefices. In 1870 a constitution for the disestablished church was adopted at a general convention in Dublin, under which the affairs of the Irish Church are now managed by the diocesan synods and by the general synod in conjunction with the representative body. The supreme legislative powers reside in the general synod, which meets in Dublin, and is composed of the archbishops of Armagh and Dublin and the 11 bishops, and of lay and clerical representatives from the different dioceses; the lay representatives being more than twice as numerous as the clerical. The representative body incorporated in 1870 consists of the archbishops and bishops *ex officio*, 39 lay and clerical elected members (three for each diocese), and 13 co-opted members elected by the other two classes conjointly. This body is empowered by its charter to hold Church property, subject to the regulations of the general synod. The Church uses the Book of Common Prayer, as revised in accordance with statutes passed by the general synod, and furnished with a preface containing an exposition of its formularies in the sense in which they are understood by the Church.

IRE'LAND ISLAND: one of the Bermudas (q.v.).

IRELAND, ALLEYNE, American author and lecturer: b. Manchester, England, 1871, Jan. 19. He was educated at the University of Berlin, traveled widely, lectured on

tropical colonization at Cornell University in 1899, and in 1900 was appointed lecturer in politics at the University of Chicago, where his subjects were tropical colonization and Chinese foreign relations. In 1901–2 he lectured at Lowell Institute, Boston, and in 1902–4 was in the far East as Colonial Commissioner of the University of Chicago. Besides contributions to periodicals, he has writen: *Georgetown Demerara* (1897); *Tropical Colonization* (1899); *The Anglo-Boer Conflict* (1900); *China and the Powers* (1901); *The Far Eastern Tropics* (1905); *The Province of Burma* (1907); etc.

IRELAND, John: b. Burnchurch, Kilkenny co., Ireland, 1838, Sept. 11: Rom. Cath. arch-bishop. He came to the United States 1849, and having received a primary education in the cathedral schools of St. Paul, Minn., entered, 1853, the preparatory seminary of Meximieux, France, and then the theol. seminary at Hyères; ordained priest 1861; was chaplain of a Minnesota regiment for a time in the civil war; became rector of the Cathedral at St. Paul, and was then, as he has been ever since, an active and successful organizer of temperance societies and advocate of temperance throughout the country. He represented Bishop Grace of St. Paul in the Vatican Council, 1870–1; was named by the pope bishop *in partibus* and coadjutor to the bishop of St. Paul and was consecrated 1875, Dec. 21. He now engaged with characteristic energy in the work of promoting Rom. Cath. colonization in the Northwest, serving as one of the directors of a national colonization soc. He went to Rome 1887 in company with bishop Keane of Richmond, Va., to present to the Pope their joint report on the need of a Rom. Cath. university at Washington; while in Europe he made a tour through the British Isles, lecturing on temperance. St. Paul having been raised to the rank of a metropolitan see, Ireland was installed as its abp. 1888, May 15. In 1891 arose the controversy about the 'Faribault plan.' The parish priest of Faribault, Minn., with the express approval of Ireland, transferred to the city school board control of the parochial school, with reservation of the right of presenting the names of the teachers to be employed by the city: the teachers, however, were to be subject to the usual examination. The expense of conducting the school was to be borne by the city. It was understood that the parish priest would have the right to present to the board for teachers members of his own religious denomination, and in fact sisters of one of the religious orders; but there were to be no religious exercises, no religious instruction, no religious emblems in the school, and the same text books were to be used as in the regular public schools. Bishops in other parts of the country strongly disapproved the Faribault plan (which was also put in practice in another town in Minnesota—Stillwater), and they lodged

a complaint at Rome, charging Ireland with violation of the ecclesiastical law as expressed in the decrees of plenary councils of Baltimore; foremost among the episcopal opponents of the 'plan' was archbishop Corrigan of New York. Ireland was summoned to Rome, and after a protracted investigation of the matter, the 'congregation (commission) of the Propaganda' published its decree 1892, Apr. 30. The judgment was received with joyful acclamations by the partisans of the 'plan,' who declared it to be a full approval of Ireland's action. Archbishop Corrigan pointed out the words *tolerari protest* in the decree, and maintained that the judgment does not go one hair's-breadth outside of the concrete case, viz. the condition existing in Faribault and Stillwater: That condition, says the decree, 'may be allowed to stand': but with these two exceptions, the decrees of the Baltimore councils stand in all their force.

IRELAND, Mary E. Haines, American translator and author: b. Calvert, Cecil County, Md., 1834, Jan. 9. In addition to serials and numerous other contributions to the periodical press, she wrote *What I Told Dorcas* (1895); *Grandma Elliot's Farmhouse* (1900); *Timothy and His Friends* (1902); *Otterbrook's Blessing* (1902); *Under the Cherry Blossoms* (1903); *Otterbrook Parsonage* (1903); etc. She has translated (from the German): *Betty's Decision* (1886); *Lenchen's Brother* (1887); *Red Carl* (1888); *Adolph's Victories* (1889); *Christian Beek's Grandson* (1890); *The Blockhouse on the Shore* (1891); *The School on Luneburg Heath* (1892); *Erna Stark* (1892); *Driven Out* (1893); *The Shepherd's Family* (1894); *The Siberian Exiles* (1895); *In Fair Silesia* (1895); *The Doctor's Family* (1896); *The Young Artists* (1897); *An Obstinate Maid* (1898); *The First School Year* (1899); *The Life Work of Pastor Harms* (1900); *In the Days of Abd-el-Kader* (1900); *Stolen for Ransom* (1901); *Erie's Vacation* (1901); *In Days of Peter the Great* (1903); *The First and Only School Friend* (1904); *Stepping Toward the Light* (1905); *The Significance of Faith in the Struggle for Existence* (1905); *The Young Violinist* (1906); *Prince Albrecht of Brandenburg* (1907); etc.

IRE'LAND, New. See New Ireland.

IRENÆUS, *ĭr-ē-nē'ŭs:* one of the most important of the ante-Nicene Christian writers: b. prob. between 120 and 140; d. prob. 202: an Asiatic by birth, but known in history solely through his connection with the Greco-Gaulish church of s. France, of which he was a bishop. He was a scholar of Polycarp, through whom he may be regarded as having sat at the feet of John the apostle and evangelist. Irenæus was a minister of the church of Lyon under the bp. Pothinus, on whose martyrdom, in the persecution of Marcus Aurelius 177, he was himself elected to the same see, which he held for 25 years.

It has been generally believed that he suffered martyrdom at Lyon in the persecution under Septimius Severus; though many modern writers doubt this. His principal, indeed almost his only complete, work is that cited usually as *Adversus Hœreses* (Against Heresies). It is directed against the Gnosticism of his own age, and is most valuable as a picture of the doctrinal and moral condition of that time. Most of his other works also were doctrinal, but they are known only by description or by fragments. The earliest edition of the works of this father is that of Erasmus (Basel 1526). They have been several times re-edited, the most prized edition being that of the Benedictine, Dom Massuet (Paris 1710, and Venice 1734).—His writings are of great value in relation to the theology of the Greek fathers, whose doctrinal forms largely took their shape from Irenæus, as those of the fathers of the Western Church did from Tertullian. The writings of Irenæus give the earliest form now known of the Nicene (Niceno-Constantinopolitan) creed. The theology of Irenæus has the Greek characteristics as distinct from the Latin; it is vital and dynamic rather than mechanical; pictorial and metaphorical in expression rather than logically precise. Irenæus's writings show him as of an earnest and pure, yet peace-making spirit.

IRENE, n. *ī-rē'nē:* in Gr. *myth.*, the goddess of peace.

IRENE. See PLANETOIDS.

IRENE, *ī-rē'nē,* Byzantine Empress: 752–803; b. Athens. She was a poor but beautiful Albanian orphan, whose beauty and talent excited the admiration of Emperor Leo IV., who married her, 769. She is believed to have poisoned her husband 780, after which event she became regent during the minority of her son, Constantine VI., then only nine years of age. A great worshipper of images—in fact, this species of idolatry had during the lifetime of her husband caused her to be banished from the imperial palace—she quickly began to plot for their restoration, and with this purpose assembled a council of bishops at Constantinople 786, which, however, was broken up by the troops of the capital. A second council at Nice in the following year was more successful, and image-worship was re-established in the Eastern Church. In 788, her army was defeated in Calabria by Charlemagne, who threatened the Byzantine empire. In 790, her son Constantine, revolting against her autocratic sway, succeeded in taking the government out of her hands; but seven years afterward she caused him to be deprived of his eyes, and shut up in a dungeon, where he soon died. Still she was not free from anxieties. Her two favorites, Stauracius and Ætius, were constantly embroiled with each other, and their jealousies ceased only with the death of the former. 800. She now tried to secure her possession of the throne by a marriage with Charle-

magne, but the Frank emperor had apparently no relish for a woman who had committed so many crimes, and the scheme proved abortive. Two years later, the patricians rebelled against her, placed her treasurer, Nicephorus, on the throne, and suddenly seized her person, and banished her to the isle of Lesbos, here she was forced to spin for a livelihood, till she died of grief, in the following year. Irene was a shrewd, able, and energetic ruler; but her crimes were so great and unnatural, that history can speak of her character only with reprobation. The Greek Church, however, on account of her zeal for image-worship has placed her among its saints.

IRENIC, a. *ī-rē'nīk*, or IRE'NICAL, a. *-ĭ-kăl* [Gr. *eirēnē*, peace]: fitted and designed to promote peace; conciliatory; peaceful. IRENICON, n. *ī-rē'nĭ-kon* [Gr. *eirēnĭkon*, peaceful]: a plan or device for peace.

IRETON, *īr'ton*, HENRY: English general of the period of the Commonwealth: 1610–1651, Nov. 15; eldest son of German Ireton, of Attenton, in Nottinghamshire. He studied law at Oxford, but on the breaking out of the civil war, offered his services to the parliament. His connection with Cromwell, whose daughter, Bridget, he married in 1646, greatly advanced his interests. At Naseby, he was taken prisoner by Rupert, but rescued some hours afterward, when Cromwell's Ironsides decided the fortune of the day. Ireton was one of the most implacable enemies of the king, and signed the warrant for his execution. When Cromwell passed over to Ireland to subdue that country, he was accompanied by his son-in-law, on whose vigor, judgment, and tact he placed much reliance. Cromwell's presence, however, was soon required in Scotland, and the complete subjugation of Ireland was intrusted to Ireton. His career was brief, but successful. He was, however, unsparing in his severity. He died of the plague before the walls of Limerick. His remains were conveyed to England, and interred in Westminster Abbey; but after the Restoration, they were disinterred, and burned at Tyburn. He left one son and four daughters.

IRIARTEA, *ĭr-ĭ-ârt'tĕ-a:* genus of palms, all S. American, having lofty, smooth, faintly ringed stems, and pinnate leaves with somewhat triangular leaflets. The leaf stalks rise from a sheathing column. The PASHIUBA or PIZIUBA PALM (*I. exorhiza*), common in swamps and marshy grounds in the forests of the Amazon district, is remarkable for sending out roots above ground, which extend obliquely downward, and often divide into many rootlets just before they reach the soil; the tree as it grows still producing new roots from a higher point than before, while the older and more central ones die, so that at last a lofty tree is supported as on three or four legs, between which a man may walk erect with a palm 70 ft. high rising straight above his head. The

outer wood is very hard, so as to be used for harpoons; splits easily, and into perfectly straight laths; is excellent for floors, ceilings, shelves, etc.; and is exported to the United States for umbrella sticks.

IRIDEÆ, *ī-rĭd'ē-ē*, or IRIDACEÆ, *ī-rĭd-ā'sē-ē:* natural order of endogenous plants, mostly herbaceous, though a few are somewhat shrubby. They have generally either root-stocks or corms. The leaves generally are sword-shaped, in two rows, and *equitant* (so placed that one seems to ride on the back of another). The perianth is 6-partite, colored, often very beautiful, in some regular, in others irregular. The stamens are three, with anthers turned outward. The ovary is inferior; there is one style, with three stigmas, which are often petal-like, and add much to the beauty of the flower. The fruit is a 3-celled, 3-valved capsule. Almost 600 species are known, the greater number natives of warm countries. They are abundant in s. Africa. *Iris*, *Gladiolus*, and *Crocus* are familiar examples of the order. Saffron is the principal economical product. Acridity is a prevailing characteristic, and some species are medicinal; but the corms and root-stocks of some are edible.

IRIDESCENCE. See under IRIS.

IRIDIUM, *ī-rĭd'ĭ-ŭm*, symbol Ir, a metallic element resembling platinum in its general properties, and occurring in nature in the metallic form, alloyed, usually, with platinum and osmium. The commercial supply comes chiefly from the Ural district, from Brazil, and from Borneo. Small amounts have also been obtained from California. The existence of iridium was first recognized, in 1802, by Tennant. The separation of iridium from other metals of the platinum group is a matter of some difficulty. It is frequently obtained in the form of a spongy gray mass, or a gray powder; but by heating either of these to whiteness, and subjecting them to compression, the metal may be brought into the form of a compact, lustrous mass resembling steel. In this form it is harder than iron, and somewhat malleable when hot, though brittle when cold. At ordinary temperatures it has a specific gravity of about 22.4, being, with the exception of osmium, the heaviest substance known. Compact iridium after being strongly heated, is insoluble in all acids, and is not affected by air or moisture. It forms numerous salts, but these are of no practical importance. The name 'iridium' (from Greek, 'rainbow'), refers to the varied colors exhibited by the salts of this element, as they pass from one state of oxidation to another. Metallic iridium, either alone or alloyed with other metals of the platinum group, is used in the arts to a limited extent, where a hard, non-corrosible metal is needed. In particular, it is used for the tips of gold and stylographic pens, for the construction of standards of length, and for standard electrical resistance coils.

IRIDOSMINE, n. *ĭ-rĭd-ŏz'mĭn* [Mod. L. *iridium; osmium*]: in *mineral.* an hexagonal opaque mineral of tin-white or light steel-gray color and metallic lustre; hardness, 6 to 7; sp. gr. 19·30 to 21·12; compos.: iridium, 43·28 to 70·40; osmium, 17·20 to 40·85, etc. It is found with platinum in Choco, South America, also in the Ural mountains, and in Australia: varieties, *Newjanskite* and *Sisserskite.*

IRIS, n. *ī'rĭs,* IRISES, n. plu. *ī'rĭs-ēz* [Gr. *iris,* or *īrĭda;* L. *īrĭs,* or *īrĭdĕm,* the rainbow, the flag: It. *iride*]: an appearance resembling the rainbow; the broad colored circle which surrounds the pupil of the eye—see EYE: the fleur-de-lis or flag flower—see IRIS, or FLOWER-DE-LUCE: a variety of rock-crystal. IRIDEC'TOMY, n. *-to-mĭ,* the act or operation of cutting out a portion of the iris for the purpose of forming an artificial pupil. IRIDESCENT, a. *ī'rĭ-dĕs'sĕnt* [F.—L.]: exhibiting a play of colors like those of the rainbow. I'RIDES'CENCE, n. *-sĕns,* exhibition of colors like those of the rainbow. IRISATED, a. *ī'rĭ-sā-tĕd,* resembling the rainbow. IRISED, a. *ī'rĭst,* containing colors like those of the rainbow. IRIDAL, a. *ī'rĭd-al,* pertaining to or resembling the rainbow.

IRIS, *ī'rĭs:* in Classic Mythology: daughter of Thaumas and Electra. She is described in Homer as a virgin goddess; but latter writers say that she was married to Zephyrus, by whom she became the mother of Eros. She was employed like Mercury, as the messenger of the gods, and to conduct female souls into the shades, as he conducted those of men. She is frequently represented on vases, and in bas-reliefs as a youthful winged virgin, with a herald's staff and a pitcher in her hands. There can be no doubt that this myth originated in the physical phenomena of the rainbow, which was personified at first as the messenger of peace in nature.—IRIS is also the name of one of the Planetoids (q.v.) discovered 1847.

I'RIS, or FLOWER-DE-LUCE, *flow'ĕr-dĕ-lôs:* genus of plants of nat. ord. *Irideœ,* having the three outer segments of the perianth reflexed, the three inner arched inward, and three petal-like stigmas covering the stamens. The species are numerous, chiefly natives of temperate climates. The YELLOW IRIS or CORN FLAG (*I. pseudacorus*), is a well-known native of moist grounds, often spreading over a considerable extent of land, and conspicuous even at a distance by its tall leaves and large deep yellow flowers. The STINKING IRIS (*I. fœtidissima*) is abundant in some southern parts of England, but does not extend far north: it has livid purple flowers, and the leaves have a very disagreeable smell. S. Europe produces a greater number of species, as also does N. America; among the latter is *I. versicolor* or Blue Flag, yielding Iridin, a strong liver stimulant. The flowers of most of the species are beautiful. Some

of them have received much attention from florists, particularly *I. xiphium*, sometimes called SPANISH IRIS; *I. xiphioides*, or ENGLISH IRIS; and *I. Germanica*, or COMMON IRIS, all corm-rooted species, and all European. Many fine varieties have been produced. The PERSIAN IRIS (*I. Persica*), the SNAKE'S-HEAD IRIS (*I. tuberosa*), and the CHALCEDONIAN IRIS (*I. Susiana*) also are much esteemed. The Persian iris is delightfully fragrant. The roots of all these species are annually exported in considerable quantities from Holland. Many other species are frequent in flower-gardens. The fresh root-stocks of *I. pseudacorus* are very acrid, as are those of many other species. Those of *I. Florentina*, *I. pallida*, and *I. Germanica* are ORRIS ROOT (q.v.). Those of *I. dichotoma*, are eaten in Siberia; those of *I. edulis* at the Cape of Good Hope.

IRISH, n. *ir'ĭsh* [*Er*, or *Eri*, ancient name of the Irish Celts: Icel. *îrar*, Irishmen: AS. *îra*, an Irishman]: the language of Ireland, a dialect of Gaedhelic—see under GAELIC; the people of Ireland: ADJ. pertaining to or produced in Ireland. IR'ISHISM, n. *-ĭzm*, a mode of speaking peculiar to the Irish. IRISH MOSS, a sea-weed possessing medicinal and nutritive properties; the *Sphærŏcoc'cus crispus*, or *Chondrus crispus*, Ord. *Algæ* (see CARRAGEEN). IRISH STEW, potatoes and meat cut into bits of no great size and stewed together.

IRISH LAND LAWS: under the Brehon laws, when the people of Ireland were divided into tribes, the land was usually the property of one of the four or five tribes which were the strongest in Erin. A large portion was given to the king or chief of the tribe, then divided among the clans that made up the tribe. Here again a large portion was given to the chief of the clan and then divided among the septs. The chief of the septs received the largest portion of the amount set apart for the sept. The free tribesmen, after the chief, received the greater part of the sept lands.

Some of the tribesmen, the Ceil, owned cattle, some, the Daer and Saer, were loaned cattle by the chief. The Fuidhir were the tenants who performed the manual labor.

When a chief died, the tribesmen distributed his land among his descendants, and when a tribesman died, the chief distributed his property. After England took possession of Ireland, the land tenure in a large part of the island continued to be administered under the Brehon laws; but within 'The Pale' the English feudal system prevailed; there the king alone owned the land and the tenants derived ownership from him. Gradually England forced her land laws upon Ireland. This was done by driving the 'rebellious Irish' out of certain counties, Kings and Queens, then all Ulster, when the Ulster plantation was established, in 1607. Other confiscations and dispossessions took place until all Ireland

came under the English law. Cromwell took forcibly the best lands of Munster and Leinster and a large part of Ulster, and divided the whole among his soldiers. Although some of the lands were restored later, it was retaken, by act of Parliament, under William III. Naturally the chiefs and leaders among the people of Ireland were deprived of their lands and the friends of the king of England or the English government, were given Irish possessions as a reward. The penal laws later made it a crime for a Catholic to acquire or hold land. Thus the Irish land question virtually began with the entrance of Henry II. into Ireland. With the Irish owners deprived of their lands there was instituted the system of 'landlordism' which has been a hindrance to Ireland's progress. The majority of those who owned the land did not live upon it, and usually the money received for rent was spent in a foreign country. The landlord owned only the land, the houses had to be built and all improvements had to be made by the tenant and at his own expense. The more a holding was improved, the more rent was demanded. The 'middle men' who held lands under the owner, and sub-let to tenants were the means of increasing the burdens of the peasantry. The commission under Lord Devon, in 1843, to investigate conditions in Ireland, revealed an alarming state of affairs and the famine of 1846–8 brought the Irish Land question to the notice of the whole civilized world, even many of the English statesmen who had censured Irish shiftlessness were astonished when they learned the nature of the land laws which gave power of eviction without any remuneration for improvements; and the wonder was that so much thrift and industry existed. In 1847 Lord Russel endeavored to have Parliament pass an act to protect the tenant against loss by eviction. This measure failed, and others accepted by Parliament later proved ineffectual. Two years after the terrible devastation by famine, the Tenant Right League was organized in Dublin, and its members began a systematic campaign to elect to Parliament members pledged to support measures for the relief of the tenants. The Land Acts of 1860, under the Palmerston ministry, may be said to have resulted from the agitation kept up by the Tenant Right League. Various other organizations for the betterment of the people of Ireland were established, and among them were 'physical force' societies. In 1870, under the Gladstone ministry, three new laws were enacted; that a tenant could not be evicted if his rent were paid; that this non-payment must be for at least three years; and that if the tenant choose, he might sell his improvements. This purchase of improvement clause was a great advance in favor of tenants' rights. The Land League in various parts of the world, especially the United States, continued the agitation and brought the question of

the wrongs of the Irish tenants before the whole world. The Ashbourne Act of 1885 provided for the purchase of the lands by the tenants and nearly $25,000,000 was set aside for that purpose. Later a like amount was added. In 1891 the Balfour Law Purchase bill was passed and nearly $150,000,000 was provided for its enactment. In 1896 this law was improved; but for various reasons all the laws enacted by Parliament proved ineffective only in so far as the bringing of the matter to the notice of fair-minded statesmen. (See LAND LEAGUE.) The most radical and satisfactory 'Land Purchase Bill' was enacted 1903, Aug. 14, whereby the tenant may purchase and own land and the government will, under certain and fair conditions, be responsible for the payment. To George Wyndham, who as chief secretary for Ireland, prepared the bill, the credit is largely due for the passage of the act. Consult: Reports on the 'Land Purchase' acts for relief of Ireland; Hansard's *Parliamentary Debates;* Guinell, *The Brehon Laws;* Maine, *Lectures on the Early History of Institutions;* Fisher, *History of Landholding in Ireland;* Richey, *The Irish Land Law;* Godkin, *The Land War in Ireland;* Richey, *The Irish Landlord.*

IRISH LITERATURE. See GAELIC LITERATURE; CELTIC NATIONS.

IRISH MUSIC has been celebrated from almost prehistoric times, Irish teachers of the art as early as the 7th century holding high rank as specialists in the faculties of continental and English colleges. While the bagpipe was the popular instrument of the common people, the harp was in great favor among the noble and educated classes, and their professional harpists were noted for their skill. The Irish scale originally consisting of five notes, gradually developed with the addition of a sixth and a seventh, until the Irish harp had a finely graduated scale of tones and semitones either in the key of C or G, extending through a compass of four octaves. A harp in the museum of Trinity College, Dublin, said to be that of Brian Boru, has 30 strings, and the Dallway harp, made in 1621, has 52 strings. The national temperament was so musically imbued that there were special songs and airs for different crafts and for almost every conceivable occasion. War marches were played by the pipers at the head of the clansmen marching to battle; spinning, weaving, smithy, plowing, boating, and sporting songs were in daily use, and there were even milking songs, slow and plaintive airs which had the effect of soothing the cows and induced them to submit gently to the milking operation. In Irish literature, native music is frequently classed under three different styles, known as mirth, sorrow, and sleep music, comprising (1) lively, spirited pieces, as jigs, reels, hornpipes and other dance music;

(2) solemn and slow pieces, as laments or dirges, commonly called *caiones* or *keens*, and sung on the occasion of a death; (3) plaintive and soothing airs, such as nurse tunes, cradle songs, lullabies, etc. In the numerous collections of these airs, about 2,000 different melodies are preserved, some of the most popular being *Savourneen Dheelish*, *Eileen Aroon* (popularly known by the Scotch appropriation *Robin Adair*), *The Coolin*, *Garryowen*, *Langolee*, *Molly Asthore* and *Patrick's Day*. With the universal spread of music after the 17th century, Irish music as a national feature became merged in the general history of the art. Turlogh Carolan, Carroll O'Daly, Reilly and the Conallons were among the chief of Ireland's ancient harpists and musicians. In modern times Ireland's musical productivity is represented by Michael William Balfe, William Vincent Wallace, Sir Charles Villers Stanford, and others. Consult: Graves and Stanford, *Songs of Old Ireland and Irish Songs and Ballads* (1882–92); id., *Songs of Erin;* Graves and Wood, *Irish Folk Song;* Graves, *Songs of Irish Wit and Humor;* and collections of Bunting, Joyce, Moore and Petrie.

IRISH PRESBYTERIAN CHURCH. See PRESBYTERIAN CHURCH IN IRELAND.

IR'ISH SEA: continuation northward of St. George's Channel (q.v.), separating the n. of Ireland from the central districts of the United Kingdom. Between the coasts of Louth and Lancaster the Irish Sea has a width of 120 m.; its greatest length between St. George's Channel on the s. and the North Channel on the n. is also about 120 miles.

IRISH SOCIETY: a committee of citizens belonging to 12 London companies, invited by James I., 1613, to take part in cultivating the confiscated lands in Ulster, which, to the extent of 511,465 acres, had become vested in the crown. The society in large measure built Londonderry, though walls and bastions had been erected there as early as 1609. They largely colonized the county of the same name, which name was bestowed in honor of the 12 London companies. The full title of the society is the Honorable Irish Society.

IRISITE: a resin-like substance, a constituent of certain natural asphaltic coals (see ASPHALTIC COAL), such as grahamite and albertite. It was investigated by Prof. Henry Wurtz. The best substance from which to extract it is the West Virginia asphalt grahamite. This is reduced to fine powder and is treated with sulphuric ether or light petroleum naphtha. The residue left undissolved contains the irisite, which is dissolved out of it by any of the following solvents: benzole, carbon disulphide, or warm oil of turpentine. The solution is filtered, and by evaporation gives irisite. It is a black, of bright lustre, and infusible without decomposition.

When its solutions are spread out in very thin layers on smooth surfaces, very brilliant interference colors are produced, whence its name (from *Iris*). If its solution is treated with a mineral acid, a species of coagulation is brought about and it becomes insoluble.

IRITIS, *ī-rī'tĭs:* inflammation of the Iris: see EYE. The cavity across which the iris is stretched, and the iris itself, which projects into that cavity, and divides it into an interior and a posterior chamber, are lined or invested by a membrane which resembles the larger serous membranes of the body, such as the pleura, peritoneum, etc.; consequently the inflammation of this membrane is of the adhesive kind: see INFLAMMATION. When it is added that the effusion of lymph may limit or entirely stop the movements of the iris, and may alter the form, or even close up the aperture of the pupil, the serious nature of the disease will be at once perceived.

The *objective* symptoms of iritis (those which can be observed by the physician) are: 1. Redness of the eye, arising from vascularity of the sclerotic; 2. Change in the color of the iris. When lymph is effused in the texture of the iris, a gray or blue eye is rendered yellowish or greenish, while in a dark eye a reddish tint is produced. The brilliancy of the color of the iris also disappears. When the inflammation is very violent, or has been unchecked by remedies, suppuration may take place. 3. Irregularity, and sometimes immobility of the pupil, produced by the adhesion of the back of the iris to the crystalline lens. The *subjective* symptoms (those of which the patient alone is conscious) are intolerance of light, dimness of vision and pain in and around the eye.

The causes of iritis are various. The disease may arise from actual injury in surgical operations performed on the eye; from over-exertion, and too prolonged continuous use of the eye when there are refractive errors uncorrected by glasses (thus, it is common among needlewomen, engravers, and watchmakers); or from some constitutional taint, especially syphilis, gout, or rheumatism.

The treatment varies to some extent according to the cause which induces it, but the great remedies are three. (1) Cupping the temples; (2) the use of mercury internally; and (3) dilation of the pupil by means of instillations of atropine solution. The disease is so serious in itself and in its possible consequences, however, that there should be no delaying in seeking the advice of a skilled physician.

IRK, v. *ėrk* [Icel. *argr,* being reluctant, avoiding through fear: Sw. *yrka,* to urge, to press: Scot. *ergh,* to feel reluctant: Gael. *airc,* a strait, a difficulty, distress]: to dull one's inclination to action; to tire or become weary; to weary; to make impatient; to annoy—

used impersonally, e.g., 'it irks me.' IRK'SOME, a. *-sŭm*, wearisome; tiresome; giving uneasiness by long continuance. IRK'SOMELY, ad. *-lĭ*. IRK'SOMENESS, n. tediousness; wearisomeness.—SYN. of 'irksome': tedious; burdensome; vexatious; weary; vexed; uneasy; troublesome; toilsome.

IRKUTSK, *ĭr-kôtsk'*: government, of E. Siberia, bounded by the govt. of Jenisseisk, the government of Jakutsk and the Chinese Empire; area, 307,990 sq. m. The soil is partly fertile, partly hilly and marshy; the climate in general severe. The Baïkal and Nerchinsk mountains, with their numerous branches, give the country a high alpine character; besides these, the Saïán range extends along the s. borders, and the Jáblonovy or Apple range along the eastern. The principal rivers are the Lena, Shilka, Agún; the largest lake is the Baïkal (q.v.). The productions of the country are rye, wheat, barley, oats, rhubarb, hops; reindeer, sables, ermines, foxes, seals; fish—sturgeon, cod, silure; minerals—gold, silver, lead, jasper, amethysts, topazes, emeralds, yellow amber, rock-salt, and coal. The people —Buriats, Tunguses, and Russians—are mostly employed in agriculture, and to some extent in fishing and hunting. A local industry is the manufacturing of an excellent oil out of stone-pine nuts. The foreign commerce consists in trade with China, through Troitzko-Savsk and Kiachta (q.v.), and has risen to great importance in recent times.

The govt. of Irkutsk is divided into five districts—Irkutsk, Verkholensk, Balagansk, Nijneudinsk, and Kirensk. The cap. is Irkutsk; the other towns are Telma, with a cloth-factory, Troitzko-Savsk, Kiachta, Kirensk on the Lena, Nijneudinsk, and Verkholensk. Pop. about 510,000.

IRKUTSK': capital of the Russian govt. of Irkutsk; residence of the gov.gen. of E. Siberia, and seat of a bishop. It is on the right bank of the Angara, near its confluence with the river Irkut, lat. 52° 17′ n., and long. 104° 26′ e., and is 3,842 m. from St. Petersburg. The town is about 1,200 ft. above the level of the sea, and has a very healthful climate, though in winter the cold is so severe as to freeze mercury. The streets are straight and wide, but ill-paved, and the houses mostly of timber. The town possesses numerous Greek churches, hospitals, a theatre, schools (including a *gymnasium*), and factories or works, besides a public library, a museum of natural history, and some other public institutions. The people mostly are Russians and Buriats. Irkutsk was founded 1661 by a Cossack chief named Iwan Pochapof; and its position on the great thoroughfare between e. and w. Siberia, between China and Russia soon made it the commercial centre of Siberia, especially for the tea-trade. The current of the Angara is so rapid that the strongest frosts seldom

cover it with ice. Nevertheless, it is navigable, and constitutes the mainway for goods bound for Kiachta by way of Lake Baïkal, as well as for those coming from E. Siberia, Alaska, and China to Irkutsk. The former are chiefly furs and metals; the latter, tea, meat, and fish from Lake Baïkal. The communications between Irkutsk and Jakutsk, and the other northern towns of Siberia, are by way of the river Lena. The manufactures of Irkutsk are local, and supply the half nomad Buriats and Tunguses, inhabiting the adjacent country. Pop. about 50,000.

IRON, n. *ī'ėrn* [AS. *íren*, for older form *ísen*, a metal in general, iron: Goth. *eisarn;* Icel. *járn;* Dut. *isern;* W. *haiarn;* Gael. *iarunn*]: an elementary body forming the well-known metal, economically speaking, the most important; an instrument made of it: ADJ. formed of iron; resembling iron in hardness, strength, etc.; harsh; stern; severe; fast-binding; impenetrable; strong; robust, as an iron constitution: V. to smooth with a heated instrument made of iron; to chain; to fetter. IRONING, imp. *ī'ėrn-ĭng*, smoothing with an iron: N. a smoothing with an iron; a shackling or arming with iron. IRONED, pp. *ī'ėrnd*. IRONS, n. plu. *ī'ėrnz*, chains; fetters; shackles—see below: tools for heating at a fire; the poker, tongs, and shovel for a grate, as *fire-irons*. IRONY, a. *ī'ėrn-ĭ*, partaking of iron; resembling iron. IRON AGE, in *Gr. and L. myth.*, the period during which justice, piety, and faith disappeared from the earth, and violence and oppression became universal, thus distinguished from the *golden, silver,* and *brazen ages;* in *European hist.*, a period said to have extended from the death of Charlemagne to the close of the Carlovingian dynasty, characterized by almost perpetual wars; in *archæol.*, the period when men began to use implements of iron instead of stone, thus distinguished from the *stone* and *bronze ages* (see AGES). IRON-BOUND, faced or surrounded with rocks, as an iron-bound coast. IRON-CLAD, covered with armor of iron; sheathed with iron or steel plates: N. a man-of-war covered or sheathed with thick plates of iron or steel. IRON-FISTED, having hard or strong fists; covetous. IRON-FLINT, a term applied to some varieties of ferruginous quartz. IRONFOUNDER, one who makes iron castings. IRON-GLANCE, the peroxide of iron, of a dark steel-gray color; specular iron ore; hematite. IRON-GRAY, a color resembling that of iron. IRON-HEARTED, hard-hearted; unfeeling. IRON-LIQUOR, a solution of acetate of iron, used as a mordant by calico-printers—usually called printers' liquor. I'RONMON'GER, n. *-mŭng'gėr*, a dealer in iron or hardware goods. I'RONMON'GERY, n. *-gėr-ĭ*, small iron or hardware goods. IRONMASTER, a manufacturer of iron, or large dealer therein. I'RONMOULD, *-mōld*, a mark or stain made by the rust of iron, etc., on cloth. IRON PYRITES, the yellow sulphide of iron. IRONSIDES, a name applied to

Cromwell's cavalry—so called from their endurance and undaunted bravery. IRON-SINTER, a recent product occurring in old mines, in crusts of a dark-brown color and vitreous lustre. IRONSTONE, the most common ore of iron. IRON TURNING, a very important branch of mechanical work, including all the various kinds of turning connected with the production of all circular bearing parts, and all revolving and close fitting work which has to be turned in power driven, slide rest lathes. IRONWARE, utensils and tools made of iron. IRON-WORK, the parts or pieces, as of a building or a vessel, consisting of iron; the manufacture of iron. IN IRONS, confined or restrained by putting chains, fetters, or manacles upon. CAST OR PIG IRON, the direct product of smelting iron ore, which is run into molds at the mouth of the smelting-furnace. CAST-IRON, iron purified, mixed with a certain percentage of carbon, and run into molds: see PUDDLING. MAGNETIC-IRON, a common ore of iron, and attractable by the magnet; loadstone. WROUGHT-IRON, cast-iron rendered malleable and ductile.

IRON: a common and exceedingly useful metallic element, which has been known and used in the arts for many centuries. It occurs in nature in the metallic form, both in meteorites and in certain lavas and volcanic rocks; but the commercial supply is obtained by the reduction of the oxides (or other ores) of the metal, by strongly heating them in a blast furnace with carbon. Iron is grayish in color, with a marked lustre. It crystallizes in the isometric system, usually in the form of cubes or octahedra. The melting point of iron varies to a considerable extent, according to the impurities with which the metal is associated, and also, apparently, according to the physical condition of the iron itself. Pictet gives it as about 2900° F. for iron that is sensibly pure. The specific gravity of the metal also varies to a considerable extent, the determinations ranging from 6.95 to 8.2. The specific gravity of pure iron, at 60° F., may be taken to be 7.85. The specific heat of the metal is about 0.112 at ordinary temperatures, and its coefficient of expansion (on the Fahrenheit scale) is about 0.0000068. Taking the electrical conductivity of mercury (at 32° F.) as unity, the conductivity of iron is about 9.68 at 32° F., and 6.19 at 212° F. Iron is the most magnetic substance known. Soft, pure iron is capable of being magnetized very highly when surrounded by a solenoid of wire that is conveying an electrical current; but its magnetization persists only while the electric current is flowing, falling off, upon the cessation of the current, to a value that is practically negligible. It is upon this property of temporary magnetization that the action of the telephone, the telegraph, and many other useful electrical inventions depends. (See MAGNETISM; and for a full

discussion of the phenomena of magnetization, consult Ewing, *Magnetic Induction in Iron and Other Metals.*) Hardened steel, when magnetized by the action of the electric current (or otherwise), retains a large proportion of its magnetism permanently. Iron becomes non-magnetic at a red heat, but regains its magnetic properties upon cooling again. Wrought iron, when pure, is malleable to a certain extent at all temperatures; but it yields to the hammer with special readiness when heated to whiteness, and it may then be forged and welded without difficulty. The presence of any considerable proportion of sulphur or phosphorus makes the metal 'short,' or brittle. When phosphorus is present in too great a proportion, the iron is brittle in the cold (that is, 'cold-short'); while if sulphur is present in excess it is brittle when hot (that is, it is 'hot-short').

Chemically, iron is a dyad. It has the symbol Fe (from 'ferrum,' the Latin name for the metal), and an atomic weight of 56 if O=16, or 55.6 if H=1. It forms two basic oxides, (1) ferrous oxide, FeO, which gives rise to a series of salts known as ferrous salts, and (2) ferric oxide (or ferric sesquioxide), $Fe_2O_3$, which gives rise to a corresponding series of 'ferric' salts. A third oxide having the formula $Fe_3O_4$, is also known, which is magnetic, and occurs in nature, either amorphous or crystallized in octahedra, as the mineral 'lodestone.' This oxide is black in color, and is known as the black oxide, magnetic oxide, or ferroso-ferric oxide. It may be prepared, artificially, by oxidizing iron at a high temperature, either in air or in steam, or by heating carbonate of iron to 650° F., in a current of carbon dioxid. It is not readily attacked by acids or other chemical agents, and for this reason a coating of it is often formed on articles of iron to protect them from further oxidation. The Russian iron that is used for stove-pipes is coated in this way, by a secret process. When in mass, iron does not readily decompose water at ordinary temperatures, though it does so at high temperatures. Finely divided iron decomposes water at 212° F., and at lower temperatures according to some authorities. When in a sufficiently fine state of subdivision, iron will burn in the air or in oxygen, with the formation of a mixture of $Fe_2O_3$ and $Fe_3O_4$. Iron forms alloys with many metals, and combines directly with chlorine, bromine, iodine, fluorine, sulphur, carbon, boron, silicon, phosphorus, and arsenic. Melted iron dissolves carbon to some extent, and when the molten mass is cooled the carbon is largely deposited in the graphitic form, although a part of it remains in the iron, combined with it in the form of a carbide; and it is believed that the presence of varying quantities of such carbides has much to do with the physical qualities of iron and steel. When melted iron that is saturated with carbon is allowed to cool under great pressure, the carbon is partly deposited

in the form of minute crystals of diamond (q.v.); but the manufacture of the diamond by this method has not yet been made commercially practicable.

*Ferrous Compounds.*—Ferrous oxide, FeO, has not yet been prepared in a state of absolute purity, but it may be obtained approximately pure by reducing ferric oxid, $Fe_2O_3$, by heating it to 600° F. in a stream of pure hydrogen. It is black in color, and absorbs oxygen with great readiness, passing into the higher oxids. Ferrous sulphate, otherwise known as protosulphate of iron, green vitriol, or copperas, is prepared by dissolving metallic iron in sulphuric acid and crystallizing by evaporation. It has the formula $FeSO_4 + 7H_2O$, and is greenish in color. It is soluble in water, but the solution oxidizes readily, the salt becoming converted into ferric sulphate, $Fe_2(SO_4)_3$. Ferrous sulphate is largely used in the manufacture of certain black dyes, in the preparation of writing ink, and, to a certain extent in photography. The ferrous oxalate developer, made by mixing a solution of ferrous sulphate with one of oxalate of potassium, was formerly in great favor, but has now fallen into comparative disuse, owing to the discovery of other developers that are more active and more convenient to handle. Ferrous chloride, $FeCl_2$, may be prepared by heating excess of iron wire or iron filings in chlorine, or by passing dry hydrochloric acid gas over hot metallic iron. It crystallizes in white, lustrous, six-sided forms, and is volatile at a yellow heat. In air it oxidizes readily to a mixture of ferric oxide and ferric chloride. Ferrous carbonate, $FeCO_3$, is an insoluble compound, occurring in nature as 'spathose iron ore,' and constituting a valuable ore of iron. Ferrous sulphide, FeS, is a black or grayish-black body which may be prepared by melting sulphur and iron together in the proportion of 56 parts (by weight) of iron to 32 of sulphur. It is insoluble in water, but dissolves readily in dilute acids, with copious liberation of sulphuretted hydrogen gas. It is therefore greatly used in chemical laboratories, where this gas is extensively used for the separation of the metals.

*Ferric Compounds.*—Ferric oxide, $Fe_2O_3$, occurs native as hematite (q.v.), and it may be prepared artificially by heating ferrous sulphate to redness. Ferric hydrate, $Fe(OH)_3$ is precipitated as a brownish-red powder when ammonia or caustic potash is added to the solution of a ferric salt. Ferric sulphate and ferric chlroide are prepared by dissolving this hydrate in sulphuric and hydrochloric acids, respectively. In general, a ferrous salt, when in solution, is converted into the corresponding ferric salt by the action of oxidizing agents; and the ferric salts, conversely, are reduced to ferrous salts by the action of certain reducing agents. Ferrous salts give a white precipitate with caustic alkalies, and, with potassium ferrocyanide, a light-blue precipitate which

quickly turns black. Ferric salts give a reddish-brown precipitate with caustic alkalies, and a deep blue precipitate with potassium ferrocyanide. Iron is sometimes called 'ferrosum' when it is present in a ferrous salt, and 'ferricum' when present in a ferric salt. See also IRON ORES.

IRON AGE: (1) in mythology, the last of the four great ages of the world, supposed to be characterized by abounding oppression, vice, and misery. (2) In archæology, an age, the third in succession, in which weapons and many other implements began to be made of iron, stone having been used for these purposes in the first, and bronze in the second.

IRON, MANUFACTURE OF: the metallic products extracted from iron ores for use in the arts are generally divided into three classes: (1) pig or cast iron, (2) wrought iron, and (3) steel.

In the present article the methods employed for the manufacture of cast iron and of wrought iron will be shortly outlined. For the methods used in the production of steel, see STEEL, MANUFACTURE OF.

Although the minerals in which iron occurs are very numerous, the only ones from which the metal can be extracted under economical conditions—that is, the only ores of iron—are those in which the iron is present as an oxide, as in magnetites, hematites, and limonites, or as a carbonate, as in siderites. (See IRON ORES.) When carbonate of iron, moreover, is heated to a sufficiently high temperature either at an early stage of the process of manufacture or in a preliminary operation (the calcining of the ore), the carbonic acid which it contains is expelled as a gas and the iron is reduced to the condition of an oxide, hence the operation of extracting metallic iron from its ores always consists in the deoxidation or reduction of iron oxide.

In order to reduce oxide of iron two conditions are essential: (1) contact with a reducing or deoxidizing substance, and (2) a high temperature. By heating iron oxide in contact with some carbonaceous fuel these two necessary conditions are realized, the carbon acting both as the needed fuel and as the needed reducing body, for at a sufficiently high temperature it has a stronger affinity for oxygen than iron and therefore deprives the latter of that element.

Iron ore, however, never consists of pure oxide of iron: in the richest varieties the iron oxide is associated with at least a small amount of other minerals, generally of an earthy character, such as quartz, clay, or limestone, and which are called the *gangue* or *vein stuff*. In the majority of cases the gangue is silicious, that is, made up chiefly of silica or quartz. Silica is *per se* a very infusible compound, but when brought in contact with iron oxide at a high temperature it combines readily with it to form a silicate of iron, a readily fusible substance or slag.

Besides the earthy matters which constitute the gangue, iron ores generally contain other minerals in which are present such elements as phosphorus, sulphur, manganese, etc., and under the strongly reducing conditions prevailing during the operation some of these elements, as well as some of the silica of the gangue, are partially reduced to the metallic state, in which condition they combine with the reduced iron. The influence of these impurities upon the quality of the iron is generally harmful, especially so in the case of phosphorus and sulphur, and their elimination constitutes one of the most delicate problems of the iron metallurgist. Metallurgical fuels also generally contain such impurities as sulphur and phosphorus, and if the fuels be used in contact with the reduced iron, these elements will in part be absorbed by the metal.

Finally, if metallic iron be kept in contact with incandescent carbon for a sufficient length of time, a considerable amount of that element will be absorbed by the metal. The conditions are then said to be carburizing. This affinity of iron for carbon plays a most important part in its metallurgy, chiefly because of the marked influence of carbon upon the melting point of the metal. Pure or rather carbonless iron requires a very high temperature to be melted (about 2,900° F.), necessitating the use of special furnaces and implements capable of producing intense heat. By the introduction of some carbon in the iron, however, its melting point is greatly lowered, from which the important conclusion is to be drawn that if the metallic product of the metallurgical operation be highly carburized it will be produced and maintained in a liquid state much more rapidly than if it were freer from carbon. If the iron contains but a small amount of carbon and if we lack the means of producing an intense heat, the product of the operation will be pasty and not molten.

*The Primitive or Direct Methods.*—The simple operation outlined in the preceding paragraphs which consists in heating iron ore in contact with carbonaceous fuel, was the one conducted in the direct or primitive methods which for ages were the only ones used for the production of iron and steel. Charcoal was the fuel employed and the simple furnace required, called a forge or bloomery, resembled a smith's forge.

So simple is the operation required for extracting a small mass of malleable iron from some rich ore that it seems highly probable that man became acquainted with the use of iron at a very early period of his existence. A fire accidentally lighted by a primeval man upon the ground where iron ore occurred near the surface would have resulted, under suitable conditions, in the production of some metallic iron. Indeed, the first iron furnaces of which we have any record consisted in a single excavation dug preferably on the side of a

hill, facing the prevailing wind, and with suitable openings at the bottom for the necessary draft. Artificial blast was later introduced and the construction of the furnace improved. It will suffice to mention here two representative types of this class of furnaces: (1) the old catalan furnace or forge, and (2) the American bloomery, a modern adaptation of this primitive forge.

The catalan forge takes its name from the province of Catalonia, in Spain, where at one time it supplied a large proportion of the world's production of iron, and where, indeed, it is still in operation, as well as in other localities adjacent to the Pyrenees. In its more modern form it consists of a shallow hearth made up of thick iron plates, with the exception of the back, which generally consists of masonry lined with fire clay, while the bottom is frequently made of a movable block of granite. The blast was undoubtedly at first supplied by crude bellows, but was later produced by a water blower or 'trompe.' The furnace is kept filled with charcoal and small lumps of rich iron ore until a pasty mass of metallic iron is obtained weighing some 350 pounds, called a 'bloom,' and which contains much slag. It is then removed from the furnace and much of the slag expelled by hammering or squeezing.

For many years a direct process known as the American bloomery process was extensively used in those localities of the United States where suitable ore and an abundant supply of charcoal were available. This process does not differ in any essential feature from the catalan method, which has just been described, but in details of furnace construction and in manipulations there are many points of difference between the two methods.

The hearth of the bloomery is kept full with burning charcoal and coarsely pulverized ores until a bloom of iron weighing some 300 or 400 pounds has been produced and which generally requires three hours. The loss of iron in the operation is said to be about 20 per cent. and the fuel consumption some 2½ tons of charcoal per ton of iron produced.

These methods are called direct because they yield iron by the direct treatment of the ore in a single operation, in contradistinction to the modern methods in which at least two distinct treatments are required for the production of iron and steel, the first operation yielding, as will be seen presently, an impure product called cast iron, which must be refined or purified in order to convert it into iron or steel.

While these methods are now obsolete, having been replaced by the more modern indirect processes they are still in use in some countries, although only to a very limited extent.

According to James M. Swank, in 1902 and 1903 there

were no forges in operation in the United States for the manufacture of blooms and billets from the ore. In 1901 the blooms and billets so made amounted to 2,310 gross tons, against 4,292 tons in 1900, 3,142 tons in 1899, 1,767 tons in 1898, 1,455 tons in 1897, 1,346 tons in 1896, 40 tons in 1895, 40 tons in 1894, 864 tons in 1893, and 2,182 tons in 1892. All the ore blooms produced since 1897 were made by the Chateaugay Ore and Iron Company, of Plattsburg, N. Y., at its Standish Works, which, however, have been idle since 1892.

*The Blast Furnace.*—In order to prevent the great waste of iron previously alluded to and resulting from the combination of the gangue of the ore with some of the metallic iron, it is necessary to provide a substance with which the silica of the gangue will readily unite, forming with it a fusible slag, and as silica is an acid it is necessary to provide a base to that effect.

Limestone (a carbonate of lime) is the most readily obtainable and cheapest substance for such purpose. It is either burned or calcined in a preliminary operation by which it is converted into lime, the carbonic acid escaping as a gas, or if used raw, it is likewise changed to lime at an early stage of the metallurgical operation by the heat to which it is exposed.

The substances which are thus added for the purpose of forming a fusible compound with the gangue of the ore or with other impurities are called fluxes.

The use of fluxes constitutes one of the most important improvements ever introduced in the manufacture of iron, for it made it possible to extract the metal, under economical conditions, from the enormous amount of relatively lean ores which occur in nature, and to do so at a relatively very low cost. Previously to the use of fluxes it was unprofitable to treat ore containing less than some 60 or 70 per cent. of metallic iron, while with their assistance iron ores with as little as some 25 per cent. of iron may be profitably smelted.

With the addition of lime, however, it is no longer possible to carry on the operation in the very simple furnace or forge previously used, because the resulting slag or silicate of lime is a much more infusible substance than the silicate of iron produced without the addition of lime and a sufficiently high temperature to fuse this lime slag could not be produced in the forge furnace.

The very high temperature required to fuse the lime slag necessitates the use of a very different type of apparatus (a high, chimney-like furnace), together with the necessary appliances for the production of the needed heat; in other words, the reduction of the ore must be carried on in the modern blast furnace. The blast furnace was gradually evolved from the primitive forge or bloomery by a mere increase in

height, such furnaces as the 'Osmund,' the 'Stückofen,' and the 'Blauofen' forming as many steps in this evolution. The exact date of the origin of the blast furnace, that is, of an apparatus in which cast iron alone could be produced—and it might be added with addition of flux—is not positively known but it is generally believed that it originated in the Rhine provinces about the beginning of the 14th century.

The operation conducted in early blast furnaces consisted chiefly in smelting iron ore with the necessary amount of charcoal for fuel and of limestone to flux the gangue of the ore. The waste gases which contained a large amount of carbon monoxide were allowed to escape and to burn freely at the top of the furnace. The molten cast iron was allowed to collect at the bottom of the furnace until a sufficient quantity had accumulated, when it was withdrawn by opening a tap hole at the bottom and in the front part of the furnace. The slag was permitted to escape as soon as formed by flowing through an opening and over a stone on one side of the furnace known as the damstone. The blast was at first created by rude bellows, later by blowing cylinders, and finally by steam-blowing engines, while no attempt was made at preheating it.

The following improvements introduced in blast furnace practice, outside of mere improvements in construction, marked the most important steps which have led to the modern blast furnace operations. They are mentioned in a chronological order: (1) Use of coke instead of charcoal introduced by Abraham Darby in 1735; (2) the heating of the blast first proposed by James Beaumont Neilson in 1828; (3) the closing of the top of the furnace and utilization of the waste gases by P. Taylor in 1840; (4) the heating of the hot blast stoves by the waste gases of the furnace successfully accomplished between 1833 and 1845 by Faber du Faur and James Palmer Budd; (5) the cup and cone arrangement for closing the top of the furnace invented by G. Parry in 1850; (6) the waste gases used for generating steam by James Palmer Budd in about 1855; (7) regenerative stoves for heating the blast introduced by E. H. Cowper in 1860.

The important and numerous improvements in construction cover every part of the furnace as well as every appliance connected with iron making. To attempt even to mention them would occupy an amount of space which is not here available.

Modern American blast furnaces generally measure from 90 to 100 feet in height and from 20 to 30 feet in diameter at the widest part, while the hearth diameter frequently measures 13 to 14 feet, giving a capacity of from 20,000 to 30,000 cubic feet. The bosh walls which extend from the hearth to the

widest part of the furnace are cooled by hollow rings of cast iron or bronze built in sections and inserted into the brick work, and through which water is constantly flowing. The water required for cooling purposes often exceeds 3,000,000 United States gallons in 24 hours. Two down-comers conduct the blast from the top of the furnace to the dust-catchers, from which it is led to the stoves and the boilers by means of a gas main. Another main leads the blast from the stoves to the furnace. Before connecting with the bustle pipe surrounding the furnace the hot blast main frequently divides in order to better equalize the pressure around the complete circle. Explosion doors are provided at the furnace top, and whenever possible in all pipes and chambers carrying gas.

Blast at the rate of 40,000 to 60,000 cubic feet per minute is forced into the furnace through pipes or 'tuyeres,' varying between 12 and 20 in number, under a pressure of 10 to 15 pounds per square inch and preheated by its passage through the stoves to a temperature of 1,000 to 1,500° F. The output of these furnaces frequently averages 600 tons of pig iron in 24 hours and is occasionally considerably greater, the furnace being tapped six times a day and some 100 tons of iron being obtained at each cast. The tapping hole is frequently opened by means of compressed air drills and closed by means of a tapping hole gun which forces clay into the hole. The fuel consumption varies between 1,500 and 2,000 pounds of coke per ton of pig iron, according to conditions.

The raw materials are conveyed to the top of the furnace by an inclined plane and skip cars, which discharge the raw materials automatically into a receiving hopper provided with a bell and placed over the main hopper. The use of an upper bell acting as a seal while the material is introduced into the furnace, prevents the escape and waste of the gases during this operation, resulting in further economy.

Modern blowing engines supplying the blast to the furnace are constructed both horizontal and vertical and are generally compound and condensing. They frequently have a capacity of some 30,000 cubic feet of air per minute which they can deliver under a pressure of 25 pounds or more per spuare inch if needed. Two such engines are generally employed for each furnace. A recent improvement in blowing engine construction consists in the use of gas or internal combustion engines for creating the blast. The first successful engine of this type was built at the Cockerill Steel Works at Seraing in Belgium and the results were so encouraging that many other similar engines have since been constructed, especially in Germany, Belgium, and France. It has been found by careful tests that gas blowing engines consume only

from one sixth to one fourth of the gas which would be required to raise the steam for use in an ordinary engine of the same capacity. In spite of its evident superiority over steam engines, however, its introduction into American plants is proceeding very slowly.

The modern stoves employed for heating the blast before it enters the blast furnace consist, roughly stated, in high cylindrical chambers filled with bricks placed some distance apart. The waste gases from the furnace are admitted at one end of these chambers together with sufficient air to burn them, and the hot products of the combustion on their way to the chimney heat the brick work to a very high temperature. After the stove has thus been properly heated, the supply of gas and air is shut off and the cold blast from the engine is admitted. The heat which has been stored up in the brick work is now imparted to the blast, which in this way is highly preheated. After the stove has cooled down to a certain temperature the blast is shut off and the stove is again heated by the waste gases. Modern furnaces are generally provided with four of these stoves, the blast passing in succession through each stove for one hour, while the three others are being heated. With such regenerative system of heating the temperature can readily be maintained at 1,450° F., which results in a considerable economy of fuel in the furnace.

Until quite recently it was the universal practice, after opening the tap hole, to allow the iron to run into sand molds, prepared for that purpose on the floor in front of the furnace, and this method is still widely used. The metallic mass filling each mold is called a pig, while the metal filling the channels connecting a number of molds is called a sow. The pigs are, of course, fastened to the sow, and, after solidification, must be broken loose, generally with sledge-hammers. When the cast iron is to be used for conversion into steel by the Bessemer process the metal as it flows from the furnace is frequently received in large tanks or 'ladles' mounted on wheels, which are afterward taken to the steel mill, where the metal is converted into steel without being allowed to solidify, thus saving the cost of remelting the pig iron. In later years casting machines have been introduced to save the heavy labor connected with the handling of the pigs, and to otherwise expedite the casting operation. Nearly all these devices consist in an endless chain, the links of which are made of small iron molds, which are filled in succession by passing under the stream of molten metal. The chain then carries the partially solidified pigs or 'chills' under water to promote their cooling and discharge them automatically on cars, the empty molds returning to the ladle again to be filled and so on.

In the modern furnaces the slag tap hole or 'cinder

notch' is kept closed as well as the iron tap hole, being opened only at stated intervals, generally a short time before the casting of the iron. In the latest American practice the slag is generally received in ladles which carry it away to the dumping place, or it is handled by means of a device known as 'slag conveyor,' and which is not unlike the casting machines just described, consisting in an endless chain of shallow pans which are successively filled as they pass under the stream of molten slag. After being immersed under water the pans are automatically emptied on cars.

*The Products of the Blast Furnace.*—Owing to the extremely high temperature at which the operation must be conducted and to prolonged contact between the reduced iron and the incandescent carbonaceous fuel, the conditions in a blast furnace are strongly carburizing, the metal absorbing a large amount of carbon (generally between 3 and 4 per cent.). Moreover, owing to the fact that highly carburized iron is much more fusible (melting generally between 2,100° and 2,400° F.) than iron containing little carbon, and to the intense heat of the furnace, the extracted metal, instead of being obtained in a semi-fused, pasty condition, will be perfectly liquid, and on account of its high specific gravity will settle at the bottom of the furnace. The slag also will be melted, and being lighter than the iron, will float as a separate layer above the metallic bath. The molten slag and the molten iron are withdrawn separately from the furnace, thus effecting their complete separation.

This highly carburized iron produced in the blast furnace is called pig iron, or cast iron. Owing principally to the large amount of carbon which it contains, the properties of cast iron are very different from those of wrought iron and steel.

Owing to the intensely reducing conditions prevailing in a blast furnace, to the high temperature and to the presence of metallic iron, many impurities, such as phosphorus, sulphur, manganese, and silicon, which are always present in greater or less amount in the ore, flux, and fuel, are partially or wholly reduced to the metallic state, and in this condition are retained, in part at least, by the molten cast iron. Cast iron therefore, is not simply an association of iron and carbon, but contains also varying amounts of the impurities just mentioned.

The following tables illustrates the rapid increase in the world's production of cast iron since the beginning of the last century.

| YEARS | Production tons. | YEARS | Production tons. |
|---|---|---|---|
| 1800 | 825,000 | 1890 | 27.157,000 |
| 1830 | 1,825,000 | 1900 | 40,400,000 |
| 1850 | 4,750,000 | 1903 | 46,420,000 |
| 1870 | 11,900,000 | 1904 | 46,000,000 |
| 1880 | 17,950,000 | 1905 | 54,000,000 |

The following table shows the wonderful growth of the manufacture of cast iron in the United States:

| YEARS | Production tons. | YEARS | Production tons. |
|---|---|---|---|
| 1810 | 53,908 | 1902 | 17,821,307 |
| 1850 | 563,755 | 1903 | 18,009,252 |
| 1875 | 2,023,733 | 1904 | 16,497,033 |
| 1900 | 13,789,242 | 1905 | 22,992,380 |
| 1901 | 15,878,354 | 1906 | 25,307,191 |

*The Refining of Cast Iron or the Indireet Methods for the Production of Wrought Iron and Steel.*—Cast iron is not malleable—it cannot be forged; that is, it cannot be shaped into finished implements by mechanical pressure such as that exerted by hammering, rolling, etc. Cast iron, therefore, can only be used as such for casting purposes, which means that cast iron implements can only be obtained by pouring the molten metal into molds having exactly or very nearly the external shape of the objects we desire to manufacture. Cast iron, moreover, is brittle and lacks both strength and toughness, which further greatly limits its useful application. To produce a metal which is forgeable, which possesses more strength and toughness and other valuable properties absent in cast iron, and, therefore, a much more useful metal, it is necessary to subject cast iron to a refining operation by which it is converted either into steel or into wrought iron.

This direct method of producing iron and steel is the prevailing modern method, for, in spite of strenuous efforts made to improve the older or direct method, it remains by far the cheaper of the two.

The refining of cast iron or its conversion into wrought iron or steel consists essentially in eliminating a large proportion of the impurities which it contains, especially carbon and silicon. In order to expel these impurities we must bring the cast iron in contact with a substance, either solid or gaseous, possessing more affinity for them than the iron itself, and here again heat is required for such reaction to take place. Oxygen has a very great affinity both for carbon and silicon, and in general for the other impurities present in cast iron, and it is upon this element that we shall depend for the elimination of the impurities. We may for that purpose use either atmospheric oxygen or the oxygen of some oxidizing substances. The oxidizing agents generally used besides atmospheric oxygen are rich iron ore or rich slag from some previous operation, or the slag produced in the refining operation itself. These substances are composed essentially of oxide of iron, which is an oxidizing compound, for it readily parts with some of its oxygen which is taken up by the carbon of the cast iron.

When cast iron in order to be purified is exposed at a sufficiently high temperature to the action of atmospheric oxygen or of some other oxidizing substance, the

silicon which it contains combines with some oxygen, being converted to silica. Some of the iron itself will be oxidized and the resulting oxide of iron will in turn enter into combination with the silica to form a fusible silicate of iron or slag.

The carbon present in the cast iron also combines with some atmospheric oxygen, or more frequently with some of the oxygen held by the slag or by some iron ore purposely added, and is converted into carbonic oxide or carbonic acid gas, in which condition it escapes from the furnace. By being deprived of its oxygen the iron ore added in some of these refining operations is reduced to the metallic state and incorporated into the refined metal.

*The Products of the Refining of Cast Iron.*—As was the case in the treatment of the ore, the nature of the metal resulting from the refining cast iron will likewise greatly depend upon the temperature at which the operation is conducted. If the temperature be low the refined metal will be obtained in a semi-fused or pasty condition, and will on that account include a relatively large amount of slag, while it will generally be quite free from carbon. In other words, the product of the refining operation conducted under these conditions will be wrought iron, or, if the conditions be made slightly more carburizing, steely iron. These are the conditions prevailing in the old forge refining of cast iron or 'finery method,' as well as in the more modern puddling process for the manufacture of wrought iron, which methods will be outlined briefly.

*The Finery Methods for the Production of Wrought Iron.*—When the ironmaster of the 13th or 14th century, through the gradual development in height of its catalan or other forge so increased the carbonizing conditions that he finally obtained a small amount of molten cast iron, he was confronted with the necessity of refining this brittle, unforgeable metal in order to convert it into malleable iron, and he quite naturally endeavored to conduct this refining operation in furnaces similar to the low hearths or forges which for so many centuries had been the only apparatus used for the direct extraction of iron from its ores. In these forges, known as 'fineries,' the pig iron was melted in contact with charcoal and under the oxidizing influence of a blast issuing from a single tuyere. While the details of the finery operation and of the furnace differed much in various countries, and even in different sections of the same country, their essential features were identical. Four of these processes attained especial prominence and have not been entirely driven out of existence by the puddling process nor later by the Bessemer process; they are the Walloon process as still conducted in Sweden, the Franche Comté process, the Lancashire process still used in England, the United States, and

some other countries, and the South Wales process which was for many years extensively used in South Wales for the production of iron plates for tinning. In recent years, however, soft Bessemer and open hearth steel have taken the place of wrought iron for such purpose and this once flourishing industry is now quite, if not altogether, extinct.

These charcoal hearths or fineries are frequently used for the remelting of iron and steel scrap resulting in the production of wrought iron of high quality. The operation consists in filling the hearth with charcoal, upon which the scrap is placed and covered with additional charcoal and the charge melted. The slag produced in this operation is very basic and therefore promotes the removal of the phosphorus and sulphur which are eliminated to a notable extent.

The iron manufactured or melted in these hearths is mainly used for the manufacture of plates, sheets, skelp, rods, etc., which are used in the manufacture of boiler tubes, boilers, screws, rivets, wire, etc.

According to J. M. Swank, the iron blooms produced in forges from pig iron and scrap in 1905, in the United States, and which were for sale and not for the consumption of the makers amounted to 12,750 tons, against 5,743 tons in 1904, 9,940 tons in 1903, 12,002 tons in 1902, 8,237 tons in 1901, 8,655 tons in 1900, 9,932 tons in 1899, 6,345 tons in 1898, 7,159 tons in 1897, and 6,494 tons in 1896. All the pig and scrap blooms made in forges from 1895 to 1906 and for sale, were made in New York, Pennsylvania, and Maryland.

*The Puddling Process.*—The finery methods described in the preceding paragraphs were the only ones available for the conversion of cast iron into wrought iron until an Englishman by the name of Henry Cort invented the puddling process in the year 1784, a date which marks a very important epoch in the metallurgy of iron. It has been seen that in the finery processes the pig iron is heated in contact with solid fuel, and this necessitates the use of charcoal, because this fuel alone is sufficiently pure to yield wrought iron of good quality. If the attempt were made to use inferior fuels, such as coal or coke, it would be found that the iron absorbed so much impurity from the coal, notably sulphur, as to be of inferior quality. The necessity of using such an expensive fuel as charcoal, and a large amount of it, is a serious limitation of the finery processes, greatly increasing the price of the iron. To make the use of more impure but cheaper fuel possible, Cort proposed to conduct the refining of the pig iron in the hearth of a reverberatory furnace, that is, out of contact with the fuel itself, thereby preventing the contamination of the iron by the impurities of the fuel. In a reverberatory furnace the fuel is burnt in a separate fireplace, the substance to be treated coming in contact

only with the flames and gases resulting from the combustion of the fuel. In the puddling furnace, moreover, the labor required per ton of iron was greatly reduced and it was possible to treat in one operation a considerably greater amount of pig iron.

The puddling operation as originally conducted by Cort and others is now known as the 'dry puddling process,' while the more modern method of conducting the operation which involves some important alteration of the original method, is known as the 'wet' or 'pig boiling' puddling process. Only the latter will here be described.

*The Wet or Pig Boiling Puddling Process.*—In the original or dry puddling process, while the oxidation of the carbon, silicon, and other impurities was brought about to a certain extent by the oxide of iron formed during the operation, we depended mostly for their elimination upon the oxygen of the air, and this necessitates for reasons which cannot here be explained the use of white or refined pig iron. The modification about to be described was introduced into the puddling process for the purpose of making it possible to treat grey cast iron at once in the reverberatory furnace doing away with the preliminary refining operation and otherwise hastening the process. It is said to have been first used by John Hall, of the firm of Barrows and Hall of Tipton, England, about the year 1830.

The modern puddling furnace employed for the conduct of the pig boiling process resembles in its general lines the earlier puddling furnaces, the essential difference being in the nature of the lining of the hearth. The bottom of the hearth and the sides are made of iron plates which are protected by a thick layer of oxide of iron, called the 'fettling' of the furnace. The substances used for fettling purposes consist of pure hematites (ferric oxide) crushed or ground to the desired size and of slags or scales obtained in the production or working of iron, and which are very rich in oxide of iron, such as roasted tap cinder or 'bull-dog.' This oxide lining, as previously stated, plays an important part in the operation by giving up a part of its oxygen to the carbon and other impurities present in the pig iron, thus greatly hastening their removal. From 300 to 500 pounds of grey pig iron are generally treated in these furnaces, frequently with the addition of some hammer scale, which consists of magnetic oxide of iron and which therefore help in oxidizing the impurities. The pig iron is now melted and becomes liquid without assuming the pasty condition characteristic of white pig iron. During the melting down period a large proportion of the silicon is oxidized and some of the carbon chiefly by the oxygen of the air. Some iron also is oxidized and slag formed, while owing to the removal of silicon the remaining carbon passes to the combined condition.

The bath is constantly stirred or 'rabbled' so as to promote contact of all portions with the oxidizing lining and with the iron oxide of the slag, thus hastening the oxidation of the silicon and carbon. As the carbon is expelled the mass becomes pasty, the metal having now 'come to nature.' The spongy mass of wrought iron is then divided into balls weighing some 60 pounds, which are withdrawn from the furnace and worked in the usual way.

The whole operation lasts usually about 1½ hour, but may be longer or shorter, according to the purity of the metal treated. The loss varies from 7 to 20 per cent., being chiefly dependent upon the amount of impurity in the pig iron. According to Turner, the consumption of coal in the puddling furnace per ton of puddled bars amounts generally to about 2,600 pounds.

*Statistics.*—The wonderful growth of the world's iron industry within 50 years is shown by the following tables, in metric tons (2,204 pounds).

| Country | 1854 | Per cent | 1905 | Per cent |
|---|---|---|---|---|
| United States | 750,000 | 12.5 | 23,340,258 | 43.1 |
| Great Britain | 3,000,000 | 50.0 | 9,746,221 | 18.3 |
| Germany | 400,000 | 6.6 | 10,987,623 | 20.3 |
| France | 750,000 | 12.5 | 3,077,000 | 5.7 |
| Russia | 200,000 | 3.3 | 2,125,000 | 3.9 |
| Austria-Hungary | 250,000 | 4.3 | 1,372,300 | 2.5 |
| Other countries | 650,000 | 10.8 | 3,386,381 | 6.2 |
| Totals | 6,000,000 | 100.0 | 54,034,783 | 100.0 |

Even more striking is the increase in steel output in the last 35 years, as shown below:

| Country | 1867 | Per cent | 1905 | Per cent |
|---|---|---|---|---|
| United States | 19,963 | 4.1 | 20,354,291 | 46.4 |
| Great Britain | 235,000 | 47.8 | 5,983,691 | 13.6 |
| Germany | 122,591 | 26.0 | 10,066,553 | 23. |
| France | 47,597 | 9.7 | 2,110,000 | 4.8 |
| Russia | 6,271 | 1.3 | 1,650,000 | 3.7 |
| Austria-Hungary | 15,000 | 3.1 | 1,188,000 | 2.7 |
| Other countries | 35,000 | 7.1 | 2,547,613 | 5.8 |
| Totals | 491,422 | 100.0 | 43,900,148 | 100.0 |

If the history of the development of the American blast-furnace practice were written it would form a large book of itself. In 1870 most of the blast-furnaces in operation were still very primitive, and although no statistics for that year are given, it is probable that the best of them did not produce as an average over 50 tons of pig iron per day, whereas now the production of 300 tons per day is a common occurrence, and some

furnaces regularly produce over 500 tons daily. The following table, taken from the United States census reports, exhibits the production of pig iron in 1870 and 1905.

| | 1870 | 1905 |
|---|---|---|
| Number of establishments | 386 | 191 |
| Capital | $56,145,326 | $239,559,194 |
| Wage earners | 27,554 | 35,178 |
| Total wages | $12,475,250 | $18,947,913 |
| Tons produced | 1,832,876 | 16,628,294 |
| Cost of materials | $45,498,017 | $178,967,449 |
| Value of product | $69,640,498 | $231,889,126 |

These figures show the rapid fall in the number of establishments, resulting from the movement of concentration nowhere so strikingly shown as in the steel and iron industry. The capital invested has increased 320 per cent. approximately in 50 years, the production over 800 per cent. and the value of the product 235 per cent. During the 20 years between 1870 and 1890 production in the Middle States had nearly quadrupled, in the Western States increased nearly 5 times, and in the Southern States nearly 10 times. In 1890 the American product passed the record figures of the British furnaces, made in 1882. Between 1890 and 1895 the American trade suffered considerably and fell below the British in its total product; then it again advanced and is now 100 per cent. greater than that of Great Britain.

IRON IN MEDICINE: iron was in use in medicine by the Chinese as early as 2700 B.C., and was employed in the treatment of anæmia much as it is administered today. In its native form, as iron, it is devoid of action, but when reduced to a salt, or oxide, capable of dissociation, it becomes active. Iron differs from many of the other heavy metals in that it is an active ingredient of the tissues, and is probably essential to the life of many if not all forms of living things. In the human blood it is an absolutely essential constituent, and its importance is great for all of the tissues of the body. In a number of the animals that lack red blood-corpuscles iron is not found abundantly in the blood, but is nevertheless present in large amounts in all parts of the body, and is perhaps just as essential for the chemical processes of nutrition as in higher vertebrates. It is well known that the presence of iron is necessary for the active processes of photosynthesis in plants, and that in its absence the higher plants are unable to develop chlorophyll, although chlorophyll itself does not contain iron in the form of hæmoglobin. It is of interest, however, to note that Nencki, a Russian biologist, has shown that reduction compounds of hæmoglobin and of chlorophyll are very closely allied, and

he propounds the interesting speculation that probably the same iron compound was present in the living matter before a differentiation of animal and plant was made, and that as plants and animals developed along divergent lines of structure the iron compounds became somewhat separated in their chemical character.

Iron combinations in medicine are usually divided into two classes, inorganic and organic. In the former the iron is dissociated in solution, and is usually acted upon by the hydrochloric acid of the gastric juice and converted into soluble chlorides, in which form it probably enters into the tissues. In the organic iron it is probable that the same conversion takes place, although there is much controversy regarding the method of its absorption; but this is true of all iron. The iron is usually taken up in the stomach and intestines, the larger part of it being rejected, and it enters into the blood in the form of an albuminate which passes into the duodenum, some being absorbed by the epithelium, and more or less of it carried directly to the spleen and probably to the liver. In the spleen it seems to undergo some changes, and is taken up by the blood and thereafter deposited more particularly in the liver and in the bone-marrow. When there is deficiency of iron in the blood or other organs, the liver gives up its store and it is absorbed by the tissue that is most in need of it. While in the blood, iron is the great organ of oxidation. By means of the hæmoglobin the oxygen of the air is taken up and distributed to the different parts of the body. This permits of the active chemical oxidative changes that take place throughout the entire body, which changes are of such vital importance in general metabolism, and without which the body suffers, degenerates and dies.

Iron is used particularly for diseases in which the blood is poor in that metal. This is particularly the case in anæmias of primary and secondary character. In primary anæmia or chlorosis (q.v.), iron is a distinct help, often curing the condition. In primary pernicious anæmia, which is a grave blood-disease, it is of secondary value. In all of the secondary anæmias, those that follow hemorrhage, the acute infectious diseases, such as scarlet fever, malaria, whooping-cough, measles, typhoid, pneumonia, etc., iron is of great service. It is particularly valuable following childbirth or any condition in which there has been a great loss of blood. It is also useful in conditions of scanty menstruation, in tuberculosis, and is one of the best general tonics in the realm of medicine. The effects of inorganic and iron solutions on the teeth should be borne in mind, although they are much exaggerated. Iron is apt to cause a certain amount of constipation, but this, by proper laxatives regularly taken, should be overcome.

I'RON BARK TREE: name in Australia for certain

species of *Eucalyptus* (q.v.) particularly *E. resinifera*, on account of the extreme hardness of the bark. These trees attain a height of 80 or 100 ft., and a circumference near the base of 20 to 25 ft. The timber is very valuable for shipbuilding, and for other purposes in which hardness and durability are required. It withstands vicissitudes of weather for many years.

IRON-CLAD OATH: special oath prescribed by the U. S. govt., in accordance with the provisions of Sec. 3, Art. XIV., amendments to the federal constitution, ratified 1868. According to the section, no person shall be a senator or representative in congress, or elector of pres. and vice-pres., or hold any office, civil or military, under the United States, or under any state, who, having previously taken an oath as a member of congress, or as an officer of the United States, or as a member of any state legislature, or as an executive or judicial officer of any state, to support the constitution of the United States, shall have engaged in insurrection or rebellion against the same, or given aid and comfort to the enemies thereof. In the Iron Clad Oath an elected or appointed officer prior to entering on the discharge of the duties of his office was obliged solemnly to swear 'that I have never voluntarily borne arms against the United States since I have been a citizen thereof; that I have voluntarily given no aid, countenance, counsel, or encouragement to persons engaged in armed hostility thereto; that I have neither sought, nor accepted, nor attempted to exercise the functions of any office whatever under any authority or pretended authority in hostility to the United States; that I have not yielded a voluntary support to any pretended government, authority, power, or constitution within the United States, hostile or inimical thereto.' The remainder of the oath is the usual declaration to support and defend the constitution and bear true faith and allegiance to it. As few citizens of the states lately in rebellion could subscribe to the Iron Clad Oath, and the great majority were debarred from holding office by the emphatic declaration of the first part of Sec. 3, Art. XIV., the amendment further declared that congress might, by a vote of two-thirds of each house, remove the disability. This provision was rendered imperative by the necessity in the reconstruction period of returning the govts. of the states lately in rebellion to their own people. In 1872 congress removed all the disabilities imposed by Sec. 3, Art. XIV., from all persons except senators and representatives of the 36th and 37th congresses, officers in the judicial, military, and naval service of the United States, heads of departments, and foreign ministers of the United States. In 1876 an attempt was made to remove all disabilities remaining on any person by virtue of the above Sec. 3, Art. XIV., but was defeated. Soon after the ratification of the amendment congress removed the disabilities of 1,578 persons in one bill and

3,526 in another. With the exception of occasional smaller groups, disabilities have been removed since by specific bills based on personal petition.

IRON-CLAD SHIPS. See ARMOR-PLATES; SHIPS OF WAR; BATTLESHIP.

IRON CROSS: Prussian order of knighthood, instituted, 1813, Mar. 10, by Frederick-William III., and conferred for distinguished services in the war then carried on. The decoration is an iron cross with silver mounting. The grand cross, a cross of double the size, was presented exclusively for the gaining of a decisive battle, or the capture or brave defense of a fortress.

IRON CROWN: crown of the ancient Longobardian kings, given, according to an unauthenticated tradition, by Pope Gregory the Great to Queen Theodolinda and preserved till lately in the cathedral of Monza. Henry, 1311, is the first German emperor known to have worn it. It was removed by the Austrians to Vienna after 1859, but was presented to the king of Italy 1866. The outer part of the crown consists of a golden hoop, with enamelled flowers and precious stones, in form like an ancient diadem, within which is a thin plate or fillet of iron, which is declared by a tradition long opposed by the church at Milan, but adopted by the congregation 'dei sacri riti' at Rome, to have been hammered from one of the nails of the true cross. When Napoleon I. was elected king of Italy, 1805, he took this relic and crowned himself with it, disdaining to receive it from the hands of a bishop; and at the same time, he founded an order of knighthood, taking its name from the iron crown. The order—forgotten after the fall of Napoleon—was restored and re-modelled 1816 by the Austrian emperor Francis I., who gave it the name of the Austrian Order of the Iron Crown.

IRON MASK, THE MAN WITH THE: mysterious French state prisoner. The story of the prisoner thus named, confined in the Bastile and other prisons in the reign of Louis XIV., has long kept a romantic interest. The first notice of him was in a work, *Mémoires Secrets pour servir à l'Histoire de Perse* (Amst. 1745-6). According to this writer, he was the Duke of Vermandois, natural son of Louis XIV. and De la Vallière, who, having given a box on the ear to his half-brother, the grand dauphin, had to expiate it with imprisonment for life. The assertion was without foundation, for the Duke of Vermandois died in camp 1683; but the confidence with which it was made caused a deep sensation, and the romance of Mouhy, *L'Homme au Masque de Fer*, which immediately followed (Hague 1746), was read with all the more avidity that it was prohibited. Voltaire, in *Siècle de Louis XIV.*, treats the anecdote historically. According to him, the prisoner was young, and of a noble figure. In journeying from one prison to another, he wore a mask, and was

at last transferred to the Bastile, where he was treated with great distinction; and so on.

The first authentic information with regard to the Iron Mask was given by the Jesuit Griffet, who acted for nine years as confessor in the Bastile, in his *Traite des differentes Sortes de Preuves qui servent à établir la Vérité dans l'Histoire* (Liège 1769). He brought forward the MS. Journal of Dujonca, lieutenant of the Bastile, according to which Saint-Mars arrived, 1698, Sep. 18, from the Isle de Sainte-Marguerite, bringing in a litter a prisoner whom he had already had for many years in custody at Pignerol. It was related by the peasants on Saint-Mars' estate, where he stopped for a short time on his way to the Bastile with his prisoner, that at meals he sat at table with the masked man, and had a pair of pistols beside his plate. The prisoner's name was not mentioned in the Bastile or elsewhere, and his face was always kept concealed by a mask of black velvet. The journal mentions his death 1703, Nov. 19, and that he was buried in the cemetery of St. Paul. This is confirmed by the register of burials for the parish of St. Paul's, where the prisoner is mentioned under the name of Marchiali.

After long silence, Voltaire returned to the subject in *Essai sur les Meurs*, but he brought forward nothing new. In the seventh ed. of *Dictionnaire Philosophique*, he related the story anew, under the head *Anna*, corrected his errors as to time from the journal of Dujonca, and concluded with the assurance that he knew more about the matter than Griffet, but chose, as a Frenchman, to be silent. An addition to the article, apparently by the editor of the work, freely states the opinion that the Mask was an elder brother of Louis XIV. The writer makes Anne of Austria to have had this son by a favorite and being thus undeceived as to her supposed barrenness, to have brought about a meeting with her husband, and in consequence to have given birth to Louis XIV. Louis is held to have first learned the existence of this brother when he came of age, and to have put him in confinement, to guard against any possible unpleasant consequences. Linguet, in the *Bastille Dévoilée* ('The Bastile Exposed') ascribes this paternity to the Duke of Buckingham. Saint-Michel published a book 1790, in which he relates the story of the unfortunate being, and points to a secret marriage between Queen Anne and Cardinal Mazarin. What is remarkable is, that the court continued to manifest an interest in the matter, and took every means to keep secret the identity of the prisoner. When the Bastile fell, the prisoner's room was eagerly searched, and also the prison register; but all inquiry was vain. The Abbé Soulavie, who published *Mémoires de Maréchal Richelieu* (Lond. and Par. 1790), tries to make out from a document written by the tutor of that unfortunate prince, that the Iron Mask was a twin-brother of Louis XIV. A prophecy had announced disaster to the royal

family from a double birth, and to avoid this, Louis XIII. had caused the last born of the twins to be brought up in secret. Louis XIV. learned of his brother's existence only after the death of Mazarin, and that brother having discovered his relation to the king by means of a portrait, was subjected to perpetual imprisonment. This view of the matter was that almost universally prevalent till the time of the Revolution. It is followed in Zschokke's German tragedy, and in Fournier's drama, founded on the story.

The first conjecture of what till recently seemed to be the truth is in a letter dated 1770, written by a Baron d'Heiss to the *Journal Encyclopédique*. The same is repeated by Louis Dutens in *Intercepted Correspondence* (1789), who declares that there is no point of history better established than the fact that the prisoner with the Iron Mask was a minister of the Duke of Mantua. This minister, Count Matthioli, had pledged himself to Louis XIV. to urge his master the duke to deliver up to the French fortress of Casale, which gave access to the whole of Lombardy. Though largely bribed to maintain the French interests, he began to betray them; and Louis XIV., having got conclusive proofs of the treachery, contrived to have Matthioli lured to the French frontier, secretly arrested, 1679, Apr. 23, and conveyed to the fortress of Pignerol, which was his first prison. The conclusion of d'Heiss and Dutens, that Matthioli was the Iron Mask, though acute, was only a conjecture. But the documents since discovered and published by Roux-Fazillac in *Recherches historique et critiques sur l'Homme au Masque de Fer* (Par. 1800), by Delort in *Histoire de l'Homme au Masque de Fer* (Par. 1825), and Marius Topin, in *Man with the Iron Mask* (1869) seemed to leave little doubt on the subject, and the public had apparently made up its mind that the secret was at last discovered; but a still more recent work by a French officer, Th. Jung, *La Vérité sur le Masque de Fer* (*Les Empoisonneurs*) *d'après des Documents inédits des Archives de la Guerre et autres dépôts publics* 1664–1703 (Par. 1873), attempts to show that Matthioli could not have been the mysterious prisoner, and endeavors to prove that the Man in the Iron Mask was the unknown head of a wide-spread and formidable conspiracy, working in secret for the assassination of Louis XIV. and some of his ablest ministers. Funck-Brentano in 1894 revived the view that Matthioli was the mysterious prisoner, and many now consider the controversy settled and this view established. Consult Hopkins, *The Man in the Iron Mask*.

IRON MOUNTAIN: city, cap. of Dickinson co. Mich.; on the Menominee river and the Chicago and Northwestern, and the Chicago Milwaukee and St. Paul railroads. It is 208 m. n. of Milwaukee and 51 m. w. of Escanaba. It has large iron-mining interests and ships great quan-

tities of ore; has several churches, banks, newspapers, and excellent public schools. It was organized 1888 from part of Breitung township. The city government consists of a mayor and council. Its trade is principally in iron-ore and farm products. Pop. (1910) 9,216.

IRON MOUNTAIN: mammillary-shaped deposit of specular iron ore, in St. François co., Mo.; on the St. Louis and Iron Mountain railroad; 40 m. s.w. of St. Genevieve, 81 m. s.w. of St. Louis. It is about 228 ft. high, covers 500 acres, comprises deposits of irregular size and form, and its main body is 50 ft. thick and of indefinite depth. The ore is very pure and rich, nearly free from sulphur both on the surface and in the main body, contains from 90 to 97 per cent. of peroxide of iron, and is somewhat softer than that of Pilot Knob. Several million tons of ore have been taken from the mountain, and the supply still seems inexhaustible.

IRON ORES: although iron is the most abundant of the useful metals, forming 5 per cent. of the earth's crust, it is rarely found native—one famous native occurrence of it, however, being at Ovifak on the west coast of Greenland. The iron ores of chief commercial importance are hematite, magnetite, limonite, siderite and pyrite. Pure hematite contains 70 per cent. iron; magnetite 72.4 per cent.; limonite 59.89 per cent.; siderite, 48.27 per cent.; pyrite, 46.6 per cent. Iron ores, however, are practically never mined pure, but are mined in quantity averaging 10 per cent. and over less iron than above stated, the principal impurities being silica, alumina, and lime.

Hematite, ferric oxide ($Fe_2O_3$), by far the most important iron ore, varies greatly in physical characteristics. Specular hematite is black, with a brilliant metallic lustre. Martite is a variety of hematite. Magnetite, a ferro-ferric oxide ($FeO.Fe_2O_3$), is black magnetic, and crystallizes in octahedra, but as mined it is usually massive or granular. Ilmenite, an oxide of iron and titanium, is not yet an ore of commercial importance. Franklinite, an oxide of iron, manganese, and zinc, found at Franklin, N. J., is used in making spiegeleisen, an alloy of iron and manganese after the zinc has been removed by roasting. Limonite or brown hematite, hydrated ferric oxide ($2Fe_2O_3.3H_2O$), is brown or yellow in color and occurs in massive, earthy, or in botryoidal forms. Bog-ore is a variety of limonite. Goethite, differing from limonite in crystalline form and containing less water, is found in large quantities in Minnesota. Siderite, or spathic iron, ferrous carbonate ($FeCO_3$), is white to gray when pure, and crystallizes in rhombohedra. As mined, it varies much in appearance, owing to oxidation. Clay iron stone is siderite mingled with clay. Blackband ore is siderite mixed with more or less bituminous matter. Pyrites, ferric disulphide ($FeS_2$), often called 'fool's gold,' is used in great quantities to

make sulphuric acid . The residue, known as 'blue-billy,' or pyrites clinker, is in some countries smelted in the blast-furnace as an iron ore

In smelting an ore the silica, lime, and alumina are removed as slag. Ores high in silica require more limestone in the furnace-charge for fluxing, that is, for combining with the silica. Some ores contain silica and lime in such proportions as to be self-fluxing. The higher the iron content of an ore, generally speaking, the greater the yield per ton of material put through the furnace, and the lower the cost per ton of the iron made.

A very hard ore must be broken into small lumps to give best results in the furnace. Hematites often smelt easier than magnetites. A fine granular ore makes trouble in smelting, and a certain proportion may be lost as dust, which clogs furnace-flues. The really injurious impurities most often found in iron ores are sulphur, phosphorus, and titanium. Sulphur can be largely removed by roasting the ore before smelting; phosphorus cannot, and all the phosphorus in the ore goes into the iron. For making steel by the Bessemer process an ore should contain less than 1–1,000 of its amount of iron; thus, to be classified as Bessemer, an ore containing 61 per cent. iron should contain less than .061 per cent. phosphorus. For making steel by the basic process, high phosphorus ores are used.

The present development of the world's iron mines is the outcome of many factors. Generally speaking, it is cheaper to bring the ore to the fuel than the fuel to the ore, hence, countries or districts that have great supplies of iron ore may be insignificant producers of pig-iron. Low-priced fuel has been the chief factor in determining the location of iron and steel industries, while the chief factors in the development of iron mines are the quality of the ore and the cost at which it can be put down at the furnace.

*Iron-Ore Supplies of the World.*—The iron industry in Asia is several thousand years old, but the annual output of iron ore is small. China has vast but little-developed deposits of limonite and hematite. Japan is very poor in iron ores. The iron industry of Australia is not of importance. The only ores exported from Africa are mined in Algeria, where the annual production has fallen to about 150,000 tons. Europe has famous ore fields. The ores of Elba and those of Styria were worked by the Romans. Certain Swedish mines have been worked almost continuously since 1300. The German output now comes chiefly from so-called minette beds of Lorraine and Luxemburg. The ore, a low-grade limonite high in phosphorus, is used in making steel by the basic process, and the present annual output is over 7,000,000 tons annually. The total ore supply left in the field is estimated at nearly 2,000,000,-

000 tons. The iron fields of Great Britain have passed their greatest productiveness. The principal districts are Cleveland in North Yorkshire, yielding clay ironstone containing about 30 per cent. iron; Cumberland and Lancashire, yielding red hematite containing 50 to 60 per cent. iron; and Lincolnshire, Leicestershire, and Northampton, yielding cheaply-mined low-grade hematite. The blackband ores of Scotland are of much less importance than formerly. The principal Spanish mines are in the Bilbao district in the province of Biscay, the productive field being 15 miles long and 2½ wide. The ores are red and purple hematite, limonite, and carbonate, the iron content in the crude ores running from 45 to 56 per cent. The district has produced to date about 95,000,000 tons. The greater part of the Russian ore supply comes from the Ural mountains, the ores on the east side of the range being magnetite, and on the west side limonite and carbonate. Near Krivoi Rog, in the Caucasus, are mines of hematite and magnetite. Fully 80 per cent. of the iron ore of France is obtained from the the minette beds of the Moselle that extend into Lorraine and Luxemburg. Most of the French ores are limonites. The principal Austrian iron mines are in Styria, the Styrian Erzberg having one of the largest deposits of siderite in Europe, yielding yearly about 1,000,000 tons of carbonate ore, containing 40 per cent. of iron. In Bohemia are mines of magnetite, limonite, and siderite. Sweden has immense deposits of iron ore, chiefly magnetite with some specular hematite. The most important deposits are at Grangsberg in Central Sweden, where are specular hematite and magnetite ores containing 62 to 64 per cent. iron and 0.9 to 1.5 per cent. phosphorus, and at Gellivare, 100 miles from the Gulf of Bothnia, where are huge bodies of magnetite that run from 68.69 iron and 0.05 phosphorus to 60 per cent. iron and 1.5 per cent. phosphorus. The ores from this field and the neighboring districts of Kurunavara and Luossavara will be of great importance to British iron-masters, and shipments to the Atlantic seaboard of the United States are quite possible.

The iron ore supplies of South America have been little developed, and those of Mexico are just coming into prominence. In the province of Santiago, Cuba, are deposits of high-grade hematite. At Belle Isle, N. F., beds of hematite are now worked on a large scale. In Ontario, Quebec, and British Columbia are deposits of good hematite and magnetite, and the Dominion will soon be a large producer. There is a possibility of iron ores being mined in Labrador.

The United States leads the world in the production of iron ore. The ores mined range from low grade limonite to the highest grade hematites and magnetites. The purest ore ever mined in the United States in quantity was probably the magnetite from the Lovers Pit at

Mineville, N. Y., which ran 72 per cent. iron in carload lots, though the Lake Angeline mine at Ishpeming, Mich., has shipped hard hematite running 68 per cent. iron and 0.008 phosphorus in thousand-ton lots. Minnesota now leads the States in production, with Michigan second, Alabama third, and Pennsylvania fourth. The chief centre of iron-ore production is about Lake Superior, where the ores occur along five mineral belts or 'ranges,' in Pre-Cambrian rocks. The Marquette range, in Michigan, was opened in 1856; the Menominee, mostly in Michigan, but partly in Wisconsin, in 1887; the Gogebic, in Michigan and Wisconsin, in 1884; the Vermilion, in Minnesota, in 1884; and the Mesabi, in Minnesota, in 1892. The ores shipped are nearly all red hematite. The Marquette produces some magnetite. As much of the ore is hauled long distances to a furnace, 60 per cent. iron was once about as low grade ore as could be shipped profitably, but now some mines ship Bessemer ores containing but 45 per cent. iron. The ore-bodies are sometimes of great size. The Chapin mine, on the Menominee range, is working lenses 100 feet wide and 600 feet thick in the middle, and 2,500 feet long. The Mesabi deposits are flat-lying, covered by a varying depth of clay, sand, and boulders. By stripping off the surface and working the granular ore with steam-shovels, an enormous output is possible.

In the South there are three important iron-mining centres—one near Birmingham, Ala., another in southeastern Tennessee, and the third in southwestern Virginia. The ores are red hematites and low-grade limonites. The growth of the Alabama industry is due to cheap ore, limestone and coking-coal being found in close proximity. Pennsylvania leads the Union in the production of magnetite, chiefly from the great ore-body at Cornwall, and also produces much limonite. New York and New Jersey also produce magnetite, and the former State some red hematite. Carbonate ores now come chiefly from Ohio. Of the western States, Colorado produces limonite, and in Utah and Wyoming are great deposits of magnetite and hematite, destined to be of importance in the near future. The famous specular hematite mines at Pilot Knob and Iron Mountain, Mo., are exhausted. Texas has large deposits of ore, and several other states are or will be important producers. According to reports of the United States Geological Survey the production of iron ore in 1902 was 35,554,135 tons valued at $65,412,950, in 1903, 35,019,308 tons valued at $66,328,415, in 1904, 27,644,330 tons valued at $43,186,741, and in 1905, 42,526,133 tons valued at $75,165,604.

IRONS, otherwise called BILBOES (q.v.): shackles of iron into which the ankles of a prisoner are fixed, and which slide on a long iron bar. Refactory sailors and soldiers, who evince violent behavior, and become unmanageable, are commonly put in irons, several men

being placed side by side along the same bar. In cases of extreme violence, the wrists may be similarly treated, but this is rare. The punishment of 'putting in irons' is more frequent in the navy than in the army.

IRONTON, *ī'ėrn-ton:* city, cap. of Lawrence co., O.; on the Ohio river and on the Detroit S., the Norfolk & W., and the Cincinnati, H. & D. R.R.'s; about 100 m. directly s.e. of Columbus. The Chesapeake & Ohio railroad, in Kentucky, has here a ferry for passengers and freight, which practically gives the city the benefit of four important railroads. Ironton was settled in 1832, and for some years was known as a river-trading town. It was incorporated in 1849. It is situated in a section of country noted for its clay (suitable for pottery), iron ore, and bituminous coal. Its chief industrial establishments are foundries, rolling-mills, blast-furnaces, machine-shops, nail-works, furniture factories, and planing-mills. It has also among its manufactures doors and mantles, stoves, boilers, cement, and fire-bricks. The clay in the vicinity is much used for pottery. The parks, River View, Lincoln, and Beechwood, are attractive. Some of the principal buildings are the Briggs Public Library, the Kingsbury school, Odd Fellows' Hall, Masonic Temple, City hospital, and several churches. Ironton was the home for some time of the artist Sarah Cotter-King. Pop. 11,868.

IRONWOOD: name given in different countries to the timber of different trees, on account of its hardness and heaviness.—*Metrosideros vera,* of nat. ord. *Myrtaceæ,* is a native of Java and other eastern islands. It has ovato-lanceolate, shortly stocked, smooth, sharp-pointed leaves; and axillary, many-flowered, stalked cymes. Its wood is much valued by the Chinese and Japanese for making rudders, anchors, etc., and is exported in small quantities under the name of ironwood. The bark is used in Japan as a remedy for diarrhœa and mucous discharges.—*Mesua ferrea,* tree of nat. ord. *Guttiferæ,* native of the E. Indies, is planted near Buddhist temples for its fragrant flowers, with which the images of Buddha, are decorated. The flowers resemble small white roses, and contrast singularly with the deep crimson buds and shoots. The timber known as ironwood is very hard, as is that of *M. speciosa,* another tree of the same genus and region. The wood of *Vepris undulata,* of the order *Diosmaceæ,* called White Ironwood at the Cape of Good Hope, is very hard and tough, and is used chiefly for axles, plows and other agricultural implements.—The wood of *Olea laurifolia,* species of olive, called Black Ironwood in the same country, is used for the same purposes, and for furniture.

I'RONWOOD, Mich., city in Gogebic co., on the Wisconsin C. and the Chicago & N. W. R.R.'s about 12 m. s. of Lake Superior and 33 m. s.e. of Ashland. It was settled in 1884 and incorporated in 1887. It is situated

in a region rich in iron ore and timber; the section is known as the 'Gogebic iron region.' The famous Norrie mine is in this vicinity. Ironwood is the trade centre for the greater part of the mining and lumbering business of the county. Some of the principal buildings are the Carnegie library, the city-hall, the high school, and several churches. Trolley lines connect the city with Gile and Hurley, Wis. The government is vested in a mayor, who is elected annually, and a council. The mayor appoints, subject to the approval of the council, all the subordinate officials except the members of the board of education. Pop. 9,705.

IRONY, n. *ī'rŏn-ĭ* [F. *ironie*—from L. *īrōnĭă;* Gr. *eirōneiă,* irony—from *eirōn,* a dissembler in speech—from Gr. *eirein,* to speak, to say: It. *ironia:* comp. Gael. *aithrin,* a sharp point, a satirist]: peculiar mode of thought and expression in which the meaning of the speaker is contrary to his words; a delicate species of sarcasm. When skilfully used, irony is one of the most crushing and irresistible figures of rhetoric. Instances are frequent in history and literature. One of the most celebrated is that recorded in Scripture, where Elijah taunts the discomfited priests of Baal on Mount Carmel. In philosophy the term has been used as a rule to characterise either the Socratic attitude of assumed ignorance, or the Romantic attitude whereby the only criterion for the æsthetic worth is found in the consciousness of the artist himself. From this point of view the real world of ordinary men sinks to a secondary and inconspicuous place. This latter position readily passes over into pessimism with its condemnation of all life fortunes as unworthy and painful. IRONIC, a. *ī-rŏn'ĭk,* or IRONICAL, a. *-ĭ-kăl,* reproving faults and errors by seeming to approve or defend them; speaking by contraries. IRON'ICALLY, ad. *-lĭ.*

IROQUOIAN STOCK: a linguistic stock of North American Indians deriving their name from the form Iroquois (q.v.), the name given to the 'Five Nations.' The Saint Lawrence River was probably their first habitat, and from there they gradually spread to the Great Lakes, primarily because of the hostility of the Algonquins. Cartier found, in 1535, a people living between Montreal and Quebec whose language showed them to be Wyandots, but 100 years later these had entirely disappeared and the Algonquins occupied their territory. The Iroquoian stock is divided into four groups: the northern —Wyandot, Tionontati, Wenrorono, Tohotænrat, Neuter, Hochelaga, the central—Mohawk, Oneida, Cayuga, Onondaga, Erie, Conestoga, Seneca; the southern—Tuscarora, Meherrin, Nottaway, Chowanoc, Coree; the Cherokee—Elati or Lower Cherokee, Middle Cherokee, and Atali or Upper Cherokee. The tribes of the Iroquoian stock were all agricultural, and were noted for their houses and fortifications. They have also made

considerable advance in education. The whole population is about 43,000, of whom 10,000 are in Canada. The major portion of the population are Cherokee. See IROQUOIS.

IROQUOIS, *ĭr-ō-kwoi'*, the name given by the French to the confederacy of North American Indians, called by the English the 'Five', and afterward the 'Six Nations.' The Mohawks, Oneidas, Onondagas, Cayugas, Senecas, and Tuscaroras, after they were driven from their hunting-grounds in North Carolina in 1712, were the members of this confederacy. They formerly resided on the Mohawk River in New York State and on the lakes which still bear their names, and extended their conquests to the Mississippi and beyond the St. Lawrence. Their valor and successes had procured them the name of the Romans of America. Their territory abounded with lakes well stored with fish; their forests were filled with game, and they had the advantage of a fertile soil. The sachems owed their authority to public opinion; the general affairs of the confederacy were managed by a great council, composed of the chiefs, which assembled annually at Onondaga. The history of the Iroquois probably dates back to 1535, when Cartier found the peoples who had settled along the shores of the Saint Lawrence River, from Quebec to Montreal, and who, judging from the similarity in languages were undoubtedly the ancestors of the later Iroquois. The Algonquins, who at this time were more powerful, drove those people from their habitations and scattered them throughout the country, some, like the Hurons, traveling west, and the majority, among whom were the Iroquois, going south, settling mainly in North Carolina. Hiawatha, their leader, then persuaded them to form a league or confederacy for their own protection, and the league thus formed became known as the 'Five Nations,' and was based upon such sound and well-ordered plans that it is in existence at the present time. In 1712 they were driven from their territory in North Carolina and coming north again settled in Central and Western New York. Here they gathered other tribes and merged them into the confederacy; and in 1715 took in the Tuscaroras, after which the league was known as the 'Six Nations'; they bought firearms and supplies from the Dutch and gradually strengthened themselves so that in 1630, they took the offensive in a long and bloody war against the Algonquins, first attacking the French missions among the Hurons in Canada and either slaying, capturing, or sending into exile all this tribe; they then rapidly subdued the Neutral Nation, the Erie, the Ottawa, and all the remaining tribes of the Algonquin race; and conquered in quick succession the Conestogas in the south, those east of the Hudson, among whom were the Mohicans, and the Miami and Illinois tribes of the Middle West.

the only tribes who successfully opposed them being the Ojibwas of the Northwest and the Cherokees of the South. In the long wars between the British and the French, which continued with some interruption for nearly a century, until 1763, they were with a few exceptions in the British interest. These exceptions were notably the Cayugas and the Mohawks, over whom the French Jesuit missionaries exercised a great influence, and who later withdrew from the league and settled in the villages of Caughnawaga and Saint Regis. In the Revolution the Iroquois as a league were neutral, but the separate tribes took up the warfare generally in favor of the British, the Oneidas and some of the Tuscaroras being the only ones who sided with the Americans. Brant led the Mohawks and Cayugas into Canada, where, at the end of the war, the Canadian government gave them several reservations, and where a majority of them are at the present time. The reservations for the Iroquois in the United States are mostly in New York, where all now live except the Oneidas, who in 1820 migrated to Wisconsin, and a small band of Senecas, who have a small reservation in the Indian Territory. According to the United States census, and a Canadian report, the total number of the Iroquois in 1902 was about 17,000, of whom about 8,000 were in the United States.

IRRADIANCE, n. *ĭr-rā′dĭ-ăns,* or IRRA′DIANCY, n. *-sĭ* [L. *irrădĭans,* making bright—from *in,* on; *rădĭŭs,* a ray]: the sending forth rays of light upon an object; lustre. IRRA′DIATE, v. *-dĭ-āt* [L. *irrădĭātus,* irradiated, illumined: It. *irradiare:* F. *irradier*]: to dart rays of light into; to illuminate; to adorn with lustre; to emit rays of light; to illuminate the mind. IRRA′DIATING, imp. IRRA′DIATED, pp. IRRA′DIA′TION, n. *-ā′shŭn* [F.—L.]: the act of sending out rays of light; brightness; act of sending out minute particles; an illusive effect of vision, by which white or bright objects seen on a dark ground appear larger, and black objects on a black ground smaller than they really are. It is due to the impression on the retina extending beyond the outline of the image; and affects specially the apparent magnitude of the stars and of the moon.

IRRADIATION: the spreading out of a stimulus so as to give an impression of increased size. It is most commonly observed in the field of vision. Under this principle, white objects appear slightly larger than dark objects of the same size. It is generally supposed that the result is due to the diffusion of the light stimulus on the retina.

IRRATIONAL, a. *ĭr-răsh′ŭn-ăl* [F. *irrationnel*—from L. *irrătĭōnālĭs,* unreasoning, irrational: *in,* not, and Eng. *rational*]: void of reason or understanding; contrary to reason; absurd. IRRA′TIONALLY, ad. *-lĭ.* IRRA′TIONAL′ITY,

n. *-ĭ-tĭ*, want of reason. IRRATIONAL NUMBERS, those which are not integers or fractions; numbers which are incommensurable with unity. Thus $\sqrt{2}$ is an irrational number; the ratio $\pi$ of the circumference of a circle to the radius is an irrational number. Incommensurable roots of numbers, like $\sqrt{2}$, are called Surds. The irrational numbers are divided into algebraic, involving only extraction of roots, and transcendental, involving higher processes. The number $\pi$ is a transcendental irrational.—SYN. of 'irrational': foolish; preposterous; unreasonable.

IRRAWAD'DY, or IRAWADI, *ĭr-a-wâd'ĭ:* the great river of Farther India. It rises on the borders of Tibet, near lat. 28° n., and long. 97° e.; flows nearly due s. through Burmah and British Burmah, and is about 1,200 m. in length. After receiving several tributaries, including the Mogonny, the Bhamo, and the Kwendween, it forms its delta about 17° n. This comprises about 8,000 sq. m. of forest and pasturage, intersected by a network of the smaller branches of the stream. The Irrawaddy is navigable, even in the dry season, by vessels of 200 tons for 500 m., and steamers of 4 ft. draught reach Bhamo, over 600 m. up; in the rainy season, 800 m. are practicable. Mandalay, Ava, Amarapura, Rangoon, and Bassein, are on or near the banks of the Irrawaddy. In all the three Burmese wars, it constituted the line of advance for British armies. For newly-formed division of Irrawaddy, see PEGU.

IRRECLAIMABLE, a. *ĭr'rĕ-klām'ă-bl* [*in*, not, and *reclaimable*]: not to be reclaimed; that cannot be reformed. IR'RECLAIM'ABLY, ad. *-blĭ*.

IRRECONCILABLE, a. *ĭr-rĕk'ŏn-sīl'ă-bl* [F. *irréconciliable: in*, not, and Eng. *reconcilable*]: not to be recalled to a state of friendship or kindness; that cannot be appeased or subdued; that cannot be made to agree or be consistent. IRREC'ONCIL'ABLY, ad. *-blĭ*. IRREC'ONCIL'ABLENESS, n. *-bl-nĕs*. IRRECONCILED, a. *ĭr-rĕk'ŏn-sīld*, not reconciled; not atoned for. IRREC'ONCILIA'TION, n. *-sĭl-ĭ-ā'shŭn*, want of reconciliation.

IRRECOVERABLE, a. *ĭr'rĕ-kŭv'ėr-ă-bl* [L. *in*, not; F. *recouvrable*, recoverable: *in*, not, and Eng. *recoverable*]: not to be recovered or repaired; that cannot be regained or remedied. IR'RECOV'ERABLY, ad. *-blĭ*. IR'RECOV'ERABLENESS, n. *-bl-nĕs*.—SYN. of 'irrecoverable': irretrievable; irremediable; irreparable; incurable.

IRRECUPERABLE, a. *ĭr'rĕ-kū'pėr-ă-bl* [F. *irrecuperable*—from L. *in*, not; *recupĕrārĕ*, to recover]: in *OE.*, irrecoverable.

IRREDEEMABLE, a. *ĭr'rĕ-dēm'ă-bl* [*in*, not, and *redeemable*]: that cannot be redeemed; not subject to be paid at the nominal value. IR'REDEEM'ABLY, ad. *-blĭ*.

IRREDENTIST, n. *ĭr-rē-dĕnt'ĭst* [It. *irredenta; ir*, *in*, not; *redenta*, fem. of *redento*, pp. of *redimere*, to re-

deem]: in Italian politics, one of the party of the Left, in whose accession to office, 1876, the cry of 'Italia Irredenta,' and pledges in favor of the unredeemed territory, were powerful factors. Unredeemed Italy was held to include Trieste and the Trentino, in the occupation of Austria; the canton of Ticino, in Switzerland; and Nice and Malta, in the respective possession of France and England. The taking office by the Left was viewed with alarm in many countries, especially in Austria; the movement, however, had no solid foundation in the feeling of the Italian people. IRREDENTIST, a. belonging to, or in any way connected with the Irredentists.

IRREDUCIBLE, n. *ĭr'rĕ-dū'sĭ-bl* [*in*, not, and *reducible*]: that cannot be brought back to a former state, or changed to a different one IRRE'DU'CIBLY, ad. *-sĭ-blĭ*. IR'REDU'CIBLENESS, n. *-bl-nĕs*. IRREDUCIBLE CASE, occurring in the solution of Cubic Equations (q.v.) by Cardan's method when $p$ is negative, and $\frac{p^3}{27}$ greater than $\frac{q^2}{4}$ (abstracting from the sign). These conditions render $\sqrt{\left(\frac{q^2}{4}+\frac{p^3}{27}\right)}$ an imaginary quantity, and thus Cardan's formula fails in its application. The difficulty is met by the aid of trigonometry.

IRREFORMABLE, a. *ĭr'rĕ-fawrm'ă-bl* [*ir*, not, and *reformable*]: that may not or cannot be revised or set aside; that may not lawfully be judged or censured.

IRREFRAGABLE, a. *ĭr-rĕf'ră-gă-bl* [*in*, not, and *refragable*: F. *irréfragable*—from mid. L. *irrefrăgābĭlĭs*, not to be withstood: It. *irrefragabile*]: that cannot be refuted or overthrown; incontestible. IRREF'RAGABLY, ad. *-gă-blĭ*. IRREF'RAGABLENESS, n. *-bl-nĕs*, quality of being incapable of confutation.—SYN. of 'irrefragable': incontrovertible; unanswerable; indisputable; unquestionable; indubitable; undeniable; irrefutable.

IRREFRANGIBLE, a. *ĭr'rĕ-frăn'jĭ-bl* [*in*, not, and *refrangible*]: that cannot be refracted.

IRREFUTABLE, a. *ĭr'rĕ-fū'tă-bl* [mid. L. *irrĕfūtābĭlĭs*: *in*, not, and Eng. *refutable*]: that cannot be disproved or overthrown by argument; unanswerable. IR'REFU'TABLY, ad. *-blĭ*.

IRREGULAR, a. *ĭr-rĕg'ū-lĕr* [mid. L. *irregŭlāris*: *in*, not, and Eng. *regular*]: not according to usual forms or rules; not according to established principles or customs; not in conformity to law, or the usual operations of nature; wanting symmetry; not regular, as regards mode of life; vicious: N. in *bot.*, a flower in which the parts of any of the verticils differ in size. IRREG'ULARLY, ad. *-lĭ*. IRREG'ULAR'ITY, n. *-lăr'ĭ-tĭ* [F. *irrégularité*]: neglect of law, form, or method; deviation from rule; vice. IRREGULAR BONES, in *anat.*, bones of a complex

figure, as vertebræ. Generally they are situated along the median line of the body. Called also mixed bones. IRREGULAR REFLECTION, in *optics*, reflection in all directions.—SYN. of 'irregular a.': unsystematic; abnormal; unmethodical; anomalous; erratic; devious; eccentric; crooked; variable; unsettled; desultory; immoderate; intemperate; wild; disorderly; inordinate; unconformable; unsymmetrical.

IRRELATIVE, a. *ĭr-rĕl'ă-tĭv* [*in*, not, and *relative*]: unconnected. IRREL'ATIVELY, ad. *-lĭ*.

IRRELEVANT, a. *ĭr-rĕl'ĕ-vănt* [L. *ir*, not; *relĕvans*, or *relĕvan'tem*, making light—from *lĕvĭs*, light: *ir*, not, and Eng. *relevant*—*lit.*, that does not relieve or lighten]: not applicable; not to the purpose; not serving to support; in *Scotch law*, denoting that what is said or put forward by an opponent in an action has no bearing on the subject, even if it were true. The corresponding term, in English law, is demurrable: see DEMUR. IRREL'EVANTLY, ad *-lĭ*. IRREL'EVANCY, n. *-văn-sĭ*, or IRREL'EVANCE, n. *-văns*, the quality of not being applicable.

IRRELIGION, n. *ĭr'rĕ-lĭj'ŭn* [*in*, not, and *religion*: F. *irréligion*—from L. *irrĕlĭgĭōnĕm*]: contempt of religion, or the want of it; profaneness; impiety. IR'RELIG'IOUS, a. *-lĭj'ŭs* [L. *irrĕlĭgĭōsŭs*]: ungodly; profane; impious; wicked. IR'RELIG'IOUSLY, ad. *-lĭ*. IR'RELIG'IOUSNESS, n. quality or state of being irreligious; want of religion.

IRREMEDIABLE, a. *ĭr'rĕ-mē'dĭ-ă-bl* [F. *irremédiable*—from L. *irrĕmĕdĭābĭlĭs*: *in*, not, and Eng. *remediable*]: that cannot be cured; not to be corrected or redressed. IR'REME'DIABLY, ad. *-blĭ*. IR'REME'DIABLENESS, n. *-bl-nĕs*.

IRREMISSIBLE, a. *ĭr'rĕ-mĭs'sĭ-bl* [F. *irrémissible*—from mid. L. *irrĕmissĭb'ĭlĭs*: *in*, not, and Eng. *remissible*]: that cannot be forgiven or remitted. IR'REMIS'SIBLY, ad. *-blĭ*. IR'REMIS'SIBLENESS, n. *-bl-nĕs*, quality of being not to be pardoned.

IRREMOVABLE, a. *ĭr'rĕ-môv'ă-bl* [*in*, not, and *removable*]: that cannot be moved or changed; that cannot be removed from office. IR'REMO'VABLY, ad. *-blĭ*. IR'REMOVABIL'ITY, n. *-bĭl'ĭ-tĭ*, quality or state of being irremovable.

IRREPARABLE, a. *ĭr-rĕp'ă-ră-bl* [F. *irréparable*—from L. *irrĕpărābĭlĭs*: *in*, not, and Eng. *reparable*]: that cannot be repaired or mended; not to be recovered, retrieved, or remedied. IREP'ARABLY, ad. *-blĭ*. IREP'ARABIL'ITY, n. *-bĭl'ĭ-tĭ*, quality or state of being beyond repair or recovery.

IRREPEALABLE, a. *ĭr'rĕ-pēl'ă-bl* [*in*, not, and *repealable*]: that cannot be revoked or annulled. IR'REPEAL'ABLY, ad. *-blĭ*.

IRREPRESSIBLE, a. *ĭr'rĕ-prĕs'sĭ-bl* [*in*, not and *repressible*]: that cannot be repressed or subdued; not to be restrained. IR'REPRESSIBLY, ad. *-blĭ*.

IRREPROACHABLE, a. *ĭr'rĕ-prōch'ă-bl* [F. *irréproachable: in,* not, and Eng. *reproachable*]: free from blame; innocent. IR'REPROACH'ABLY, ad. *-blĭ.* IR'REPROACH'ABLENESS, n. *-bl-nĕs.*

IRRESISTIBLE, a. *ĭr'rĕ-zĭst'ĭ-bl* [F. *irrésistible*—from mid. L. *irrĕsistĭb'ĭlĭs: in,* not, and Eng. *resistible*]: that cannot be resisted or opposed. IR'RESIST'IBLY, ad. *-blĭ.* IR'RESIST'IBIL'ITY, n. *-bĭl'ĭ-tĭ,* or IR'RESIST'IBLENESS, n. *-bl-nĕs,* quality of being irresistible; power beyond successful resistance.

IRRESOLUTE, a. *ĭr-rĕz'ō-lôt* [*in,* not, and *resolute:* F. *irresolu,* irresolute]: not firm or constant in purpose; not decided; wavering; given to doubt. IRRES'OLUTELY, ad. *-lĭ.* IRRESOLUTION, n. *ĭr-rĕz'ō-lô'shŭn* [F.—L.]: want of resolution; want of decision in purpose. IRRES'OLUTENESS, n. *-lôt-nĕs.*—SYN. of 'irresolute': unsettled; unstable; unsteady; vacillating; undetermined; doubting; inconstant; fickle.

IRRESOLVABLE, a. *ĭr'rĕ-zŏl'vă-bl* [*in,* not, and *resolvable*]: that cannot be resolved.

IRRESPECTIVE, a. *ĭr'rĕ-spĕk'tĭv* [*in,* not ,and *respective*]: not regarding; not having respect to, as circumstances. IR'RESPEC'TIVELY, ad. *-lĭ. Note.*—IRRESPECTIVE is followed by *of.*

IRRESPIRABLE, a. *ĭr-rĕs'pĭ-ră-bl* [*in,* not, and *respirable*]: unfit for respiration.

IRRESPONSIBLE, a. *ĭr'rĕ-spŏn'sĭ-bl* [*in,* not, and *responsible*]: not responsible; not liable or able to answer for consequences. IR'RESPON'SIBLY, ad. *-blĭ.* IR'RESPON'SIBIL'ITY, n. *-bĭl'ĭ-tĭ.*

IRRETRIEVABLE, a. *ĭr'rĕ-trēv'ă-bl* [*in,* not, and *retrievable*]: not to be retrieved; not to be recovered or repaired. IR'RETRIEV'ABLY, ad. *-blĭ.* IR'RETRIEV'ABLENESS, n. *-bl-nĕs.*—SYN. of 'irretrievable': irremediable; incurable; irrecoverable; irreparable.

IRRETURNABLE, a. *ĭr'rĕ-tėrn'ă-bl* [*in,* not, and *returnable*]: not to be returned.

IRREVEALABLE, a. *ĭr'rĕ-vēl'ă-bl* [*in,* not, and *revealable*]: that may not be revealed. IR'REVEAL'ABLY, ad. *-blĭ.*

IRREVERENT, a. *ĭr-rĕv'ėr-ĕnt* [*in,* not, and *reverent:* F. *irrévérent*—from L. *irreverens,* or *irrĕvĕren'tem,* that does not show veneration: It. *irreverente*]: wanting in due regard for the Supreme Being; wanting in respect to superiors; expressing irreverence. IRREV'ERENTLY, ad. *-lĭ.* IRREV'ERENCE, n. *-ĕns* [F.—L.]: want of due regard for the Supreme Being; want of veneration or reverence.

IRREVERSIBLE, a. *ĭr'rĕ-vėr'sĭ-bl* [*in,* not, and *reversible*]: not to be changed; not to be recalled. IR'REVER'SIBLY, ad. *-blĭ.* IR'REVER'SIBLENESS, n. *-bl-nĕs.*—SYN. of 'irreversible': irrevocable; irrepealable; unchangeable.

IRREVOCABLE, a. *ĭr-rĕv'ō-kă-bl* [F. *irrévocable*—from L. *irrĕvŏcābĭlĭs: in*, not, and Eng. *revocable*]: that cannot be recalled or annulled; not to be revoked or reversed. IRREV'OCABLY, ad. *-blĭ.*

IRRIGATE, v. *ĭr'rĭ-gāt* [L. *irrĭgātŭs*, watered, irrigated —from *in*, on; *rĭgō*, I moisten or water: It. *irrigare*]: to moisten land by causing water from a stream or canal to flow upon and spread over it; to water. IR'RIGATING, imp. IR'RIGATED, pp. watered. IR'RIGA'TION, n. *-gā'shŭn* [F.—L.]: the operation of causing water from a stream or canal to flow upon and spread over land with the view of nourishing and increasing the growth of plants. IRRIGUOUS, a. *ĭr-rĭg'ū-ŭs*, watery; moist; dewy.

IRRIGA'TION: method of producing or increasing fertility in soils by causing water from a stream or canal to flow upon and spread over land at stated periods. It is the method of applying water artificially to crops in such manner as to make up for a deficiency of rain-fall. Irrigation was probably resorted to first in countries where much of the land must otherwise have remained barren from drought; as in Egypt, where it was extensively practiced nearly 2,000 years B.C., and where great systems of canals and artificial lakes were formed for the purpose. Extensive works, intended for irrigation of large districts, existed in times of remote antiquity in Mesopotamia, Persia, India, China, and other parts of the East; and in such of these countries as have not entirely lost their ancient prosperity, such works still exist. In many parts of the world, the necessity of irrigation, at least at certain seasons of the year, is so strongly felt, that the agriculture even of comparatively rude tribes depends on the facility with which it can be accomplished. Some plants also require a very abundant supply of water, and irrigation has become general where their cultivation prevails, e.g. rice, the principal grain of great part of Asia. Irrigation is supposed to have been introduced into Britain by the Romans, but was little practiced till the beginning of the present century. In Europe irrigation prevails in the south, where it was extensively practiced by the Romans, from whom it was adopted by the Lombards; and it is most extensively practiced in Lombardy, and in parts of Spain, and of s. France; so that the great plains and valleys of the Po, Adige, Tagus, and Douro, and other rivers, are almost entirely subjected to a systematic irrigation which prodigiously increases their fertility.

Irrigation in Britain, and in most parts of Europe, except Lombardy, is almost exclusively employed to increase the produce of grass by converting the land into water-meadows. The value of it, even for this one purpose, does not seem sufficiently understood. Poor heaths have been converted into luxuriant meadows by irrigation alone. But in the countries in which irri-

gation is most extensively practiced, the production of all crops depends on it.

In the w. part of the United States irrigation is coming largely into use.

The largest arid region in the United States is the tract stretching n. from the lower Rio Grande river, along the e. base of the Rocky Mountains, as far as Fort Edmonton in Canada, and along the w. base a considerable distance into British Columbia. It extends also s. of the United States into n. and central Mexico. The area in the United States is estimated to comprise nearly 1,388,800 sq. m. of public lands. As the total reclaimable area within the arid region was estimated by Maj. Powell, second director of the United States Geological Survey, to be sufficient to form 8 states of the size of Indiana and to support an agricultural population of nearly 9,000,000, great attention has been given to irrigation. California, Colorado, Wyoming, and Utah have done much to improve their arid regions, while Kansas, New Mexico, and Arizona adopted more or less similar systems. Between the years 1880 and 1902 there was great activity in irrigation developments in these and other western states by individuals and private companies, until the greater part of the low water flow of streams which could be cheaply diverted, had been appropriated. On 1902, June 17, the United States Congress passed what is known as the 'Reclamation Act,' providing that all moneys received from the sale and disposal of public lands, belonging to the United States Government, in Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming, be reserved, set aside and appropriated as a 'reclamation fund' to be used for the survey, construction and maintenance of irrigation works for the storage, diversion and development of waters for reclamation of arid and semi-arid lands in said states and territories. Under this act the United States Reclamation Service was immediately organized and a force of over 300 civil engineers put in the field to make surveys, plans and estimates and begin construction work. Mr. Frederick Haynes Newell is Director and Mr. Arthur Powell Davis is Chief Engineer. It is believed that during each 10 years for the next third of a century an acreage equal to the total now under irrigation in all the West may be added to the agricultural area of the 16 States and Territories affected; thus rapidly multiplying production, and providing the food products needed in foreign lands. There are at present (1908) 28 large irrigation projects under construction which will cost in the aggregate over forty million dollars. Some of these are practically completed and others are only fairly begun. The following is a list of these projects by States:

| State. | Name of Project. | Estimated Cost. | Important Features. |
|---|---|---|---|
| Arizona | Salt River | $4,800,000 | Storage, Diversion and Canals |
| Arizona and California | Yuma | 3,000,000 | Storage, Diversion and Canals |
| Colorado | Uncompahgre | 2,500,000 | 6 Mile Tunnel and Canals |
| Idaho | Minidoka | 1,550,000 | 6 Mile Diversion and Canals |
| Idaho | Payette-Boise | 1,490,000 | Storage, Diversion and Canals |
| Kansas | Garden City | 260,000 | Pumping Underground Water |
| Montana | Milk River | 1,000,000 | Storage, Diversion and Canals |
| Montana | Huntley | 900,000 | Diversion and Canals |
| Montana | Sun River | 500,000 | Storage, Diversion and Canals |
| Nebraska and Wyoming | North Platte | 3,330,000 | Storage, Diversion and Canals |
| Nevada | Truckee-Carson | 3,700,000 | Storage, Diversion and Canals |
| New Mexico | Hondo | 336,000 | Storage, Diversion and Canals |
| New Mexico | Carlsbad | 600,000 | Storage, Diversion and Canals |
| New Mexico and Texas | Rio Grande | 7,200,000 | Storage, Diversion and Canals |
| North Dakota and Montana | Lower Yellowstone | 2,700,000 | Diversion and Canals |
| North Dakota | Buford-Trenton, Williston and Nesson | 1,000,000 | Pumping River Water |
| Oregon and California | Klamath | 2,000,000 | Storage, Diversion and Canals |
| Oregon | Umatilla | 1,000,000 | Storage, Diversion and Canals |
| South Dakota | Belle Fourche | 2,100,000 | Storage, Diversion and Canals |
| Utah | Strawberry Valley | 1,250,000 | Storage and Tunnel |
| Washington | Okanogan | 500,000 | Storage, Diversion and Canals |
| Washington | Tieton | 1,250,000 | Storage, Diversion and Canals |
| Washington | Sunnyside | 1,100,000 | Storage, Diversion and Canals |
| Washington | Wapato | 100,000 | Storage, Diversion and Canals |
| Wyoming | Shoshone | 2,250,000 | Storage, Diversion and Canals |

These projects will irrigate about 1,700,000 acres of land, and extensions to the same projects requiring additional expenditures will probably irrigate an equal area, making a total of about 3,500,000 acres that will be brought under cultivation by them. As these are finished, others will be taken up and the work will continue until all available water is utilized.

The reclamation fund is a revolving fund. Every

acre of arid land that is reclaimed must be owned and cultivated by an actual farmer living on the land, the maximum farm limit being 160 acres. When a project is completed the land owners are required to begin paying back to the Government the actual cost of construction without interest, the amount being pro-rated according to acreage and the payments being made in ten equal annual installments. These payments begin at the end of the first crop season after the water is turned on. The farmers are also required to pay the actual cost of maintenance and operation. At the end of ten years when all payments are made, the entire system becomes the property of the land owners, as a corporation, under Government supervision, each acre of irrigated land constituting a share of stock in the corporation, and each acre having an equal share of the water permanently attached to it, which cannot be legally separated from it in the future. As fast as payments are made, the money is returned to the reclamation fund and becomes available for other projects. In addition to this, the receipts from the sale of the public lands amount to about $5,000,000 per year. By this admirable system it is evident that funds will be available for the irrigation of the arid region to the full extent of the water supply, including all the flood water that now runs to the sea unutilized. The projects already begun include some storage reservoirs that are larger than any artificial reservoirs now in existence. The Roosevelt Dam of the Salt River Project in Arizona will be a masonry dam 270 feet high, requiring 340,000 cubic yards of masonry and will form a reservoir with capacity for empounding 1,300,000 acre-feet of water, which is 423,452,000,000 gallons.

The Eagle Dam of the Rio Grande Project in New Mexico will be a concrete structure 255 feet high, requiring 410,000 cubic yards of rubble concrete and forming a reservoir with capacity for empounding 2,000,000 acre-feet of water, which is 651,465,000,000 gallons. The U. S. Irrigation Unit for standing water is one acre-foot, equalling 43,560 cubic feet, and the unit for flowing water is one second-foot or cubic foot per second.

Irrigation in the arid region is used for fruit, vegetables, grain, sugar beets and forage crops, the most important forage crop being alfalfa. Rice is irrigated on a very large scale in Louisiana and Texas, and to a less extent in other southern states. Recently the acreage in rice has been enormously increased by the use of centrifugal pumps for lifting water to lands more elevated than those heretofore planted.

The irrigation of sugar cane in the United States and its insular possessions is largely on the increase, especially in Louisiana, Texas and Hawaii. Extensive plans are also being made for thus increasing the sugar crop of Porto Rico.

## IRRIGATION.

*Methods of Irrigation.*—For sowed grains, meadows and pastures, water is applied to the land by flooding; that is, by allowing it to flow as completely as possible over the entire surface, but only in such volume as will not cause washing and will not result in giving one part too much water and another part too little.

For crops planted in rows, and for orchards, irrigation by furrows is generally preferred. A third method is by underground pipes into which water is passed, to be distributed through the soil. This method has the advantage of not losing water by evaporation and of not forming a crust on the land surface, but it is rarely resorted to on a large scale and it is unsuitable for the irrigation of fruit trees, as the tree roots enter the pipes, and very soon fill them up completely. In any system of irrigation it is necessary to have the land properly graded, unless it is naturally smooth and comparatively level.

*Duty of Water.*—In the greater part of arid America 2½ acre feet actually applied is the average amount that is considered sufficient for one acre of land annually. This is equivalent to a 30 inch rainfall applied as needed. 2½ acre-feet is 108,900 cubic feet or 814,625 gallons. This may be called the average duty of water for arid America. Certain regions and certain crops require more and others require less. Alfalfa in southern Arizona requires 3 to 3½ acre-feet, and sugar cane on the South coast of Porto Rico requires 4 acre-feet per annum per acre.

In installing a pumping plant or constructing a main canal or aqueduct to supply a given area of land, it is safe to estimate on a capacity of 1.5 cubic feet per second, or one million gallons per 24 hours for each one hundred acres to be irrigated, in order to have capacity for delivering the maximum quantity at any one time. This rule has led to some confusion as to the duty of water, but it refers to the maximum quantity needed at any one time, and not to the total amount required during the year.

The literature of the United States Geological Survey and the United States Reclamation Service gives much detailed information concerning American irrigation, and standard English and American authors have written large volumes on irrigation in India and Egypt. The chief works are as follows: Mead, *Irrigation Institutes* (1903); Wilson, *Manual of Irrigation Engineering;* Wilcox, *Irrigation Farming;* Long, *Irrigation Law;* Newell, *Irrigation in the United States* (1902); King, *Irrigation and Drainage;* Dennis, *Reports on Irrigation and Canadian Irrigation Surveys;* Brough, *Irrigation in Utah;* Smythe, *Conquest of Arid America* (1900); Deakin, *Irrigation in Western America; Irrigation in Egypt and Italy;* Markham, *On Spanish Irrigation;* Ronna, *Les Irrigations;* Stewart, *Irrigation for the Farm,*

*Garden, and Orchard;* United States Department of Agriculture (Bull. No. 130, 1903); *Egyptian Irrigation;* (Bull. 133, 1903), *Report on Irrigation Investigations for* 1902; United States Department of the Interior, *Report on Agriculture by Irrigation* (Newell, 1894); United States Geological Survey, *Water Supply and Irrigation Papers,* Nos. 1 to 100; Newell, *The Public Domain and Its Water Supply.*

IRRITABIL'ITY, in Plants: term designating phenomena, very interesting and curious, but very little understood. Such are the phenomena of what is usually called the *Sleep* (q.v.) of plants; the motion of the spores (q.v.) of many cryptogamic plants by means of cilia; the motions of *Oscillatoriæ, Diatomaceæ,* and others of the lowest *Algæ;* the successive approaches of the stamens of *Parnassia palustris* to the pistil; the movements of the leaves of the *Moving Plant* (q.v.), of India; and those caused by agitation or by the touch of a foreign body in the leaves of *Sensitive Plants* (q.v.), of the *Dionæa* or Venus's Fly-trap, etc., in the stamens of the Barberry, *Shizanthus,* etc., and in the stigmas of *Mimulus,* etc. Many explanations have been proposed of these phenomena, but none satisfactory. Of the existence of anything analogous to the nervous system of animals, which has been imagined, there is not the slightest proof.

IRRITANT, a. *ĭr'rĭ-tănt* [L. *irrĭtŭs,* not ratified or settled—from *in,* not; *rătus,* ratified]: in *Scotch law,* rendering null and void, as an *irritant* clause: see under IRRITATE. *Irritancy* in Scotch law corresponds to forfeiture in English law.

IRRITATE, v. *ĭr'rĭ-tāt* [L. *irrītātŭs,* snarled often or greatly, as dogs, provoked—from L. *hirrīrĕ,* to snarl: Norw. *hirra,* to snarl, to incite: Ger. *zerren;* Dut. *ritsen,* to provoke to anger]: to make angry; to provoke or exasperate; to inflame or excite heat in, as the flesh or skin. IR'RITATING, imp.: ADJ. exciting; causing irritation. IR'RITATED, pp.: ADJ. excited; exasperated. IR'RITABLE, a. *-tă-bl* [F. *irritable*—from L. *irritābĭlĭs,* easily excited to anger]: easily provoked or made angry. IR'RITABLY, ad. *-blĭ.* IR'RITABIL'ITY, n. *-bĭl'ĭ-tĭ* [F. *irritabilité*]: the quality of being easily excited or provoked; the peculiar susceptibility possessed by the living tissues and fibres on the application of certain substances. IR'RITANCY, n. *-tăn-sĭ,* the state of being irritant. IRRITANT, a. *ĭr'rĭ-tănt* [L. *irritans,* exasperating]: irritating: N. that which irritates or causes pain, heat, or tension; in *medicine,* a substance or an application, producing irritation in the skin or mucous membrane. Heat, light, and electricity, are irritants under certain circumstances; but sometimes more properly stimulants. IR'RITA'TION, n. *-tā'shŭn* [F.—L.]: the act of exciting heat or redness in the skin; the heat so produced; excitement of anger

or passion; provocation; anger. IR'RITA'TIVE, a. *-tĭv*, tending to excite or irritate. IR'RITA'TORY, a. *-tā'tėr-ĭ*, exciting; producing irritation.—SYN. of 'irritate': to excite; inflame; fret; provoke; tease; exasperate; vex; enrage; incense; anger; stimulate; in *OE.*, to agitate; heighten.

IRRITA'TION: any morbid excitement of the vital actions not amounting to inflammation; often, but not always a cause of inflammation. In cases of irritation remarkable sympathetic symptoms are often observed: thus, irritation of a calculus occasions intense sickness and vomiting. But of all sources of sympathetic morbid affections of this class, irritation of the stomach and intestines is the most frequent and the most important. The ordinary sick headache is the most usual form of this sympathetic affection; but in certain morbid conditions, and especially in the puerperal state, the symptoms may closely resemble those of acute inflammation of the peritoneum, the heart, the pleura, or the membranes of the brain.

IRRUPTION, n. *ĭr-rŭp'shŭn* [F. *irruption*—from L. *irruptĭōnem:* L. *irruptus*, burst or rushed violently into —from *in*, into; *rumpĕrĕ*, to break or burst]: a sudden or violent bursting in, as of the sea; a sudden invasion or incursion, as of an enemy. IRRUP'TIVE, a. *-tĭv*, rushing suddenly in or upon. IRRUP'TIVELY, ad. *-lĭ*.—SYN. of 'irruption': inroad; incursion; invasion; intrusion; a burst; a rush.

IRTISH, *ĭr'tĭsh:* river of Siberia, affluent of the Obi (q.v.).

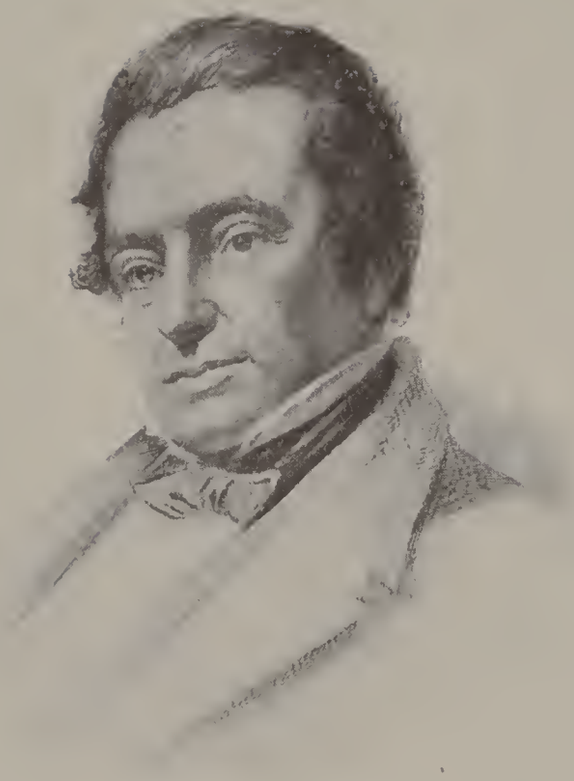
IRVINE, *ėr'vėn*, WILLIAM: 1741, Nov. 3—1804, July 29; b. Fermagh, Ireland: soldier. He graduated at Dublin Univ., studied medicine, served as surgeon on a British man-of-war in the war with France 1756–63, settled in Carlisle, Penn., 1764, was a member of the provincial convention at Philadelphia 1774, appointed by congress col. of the 6th Pennsylvania regiment 1776; taken prisoner at Three Rivers, Canada, the same year; member of the court-martial that tried Gen. Charles Lee 1778, promoted brigadier-general 1779, and in command of the troops on the w. frontier 1782,3. He was a member of congress 1786–88 and 1793–95, commander of Pennsylvania militia in the whisky insurrection 1794, superintendent of military stores at Philadelphia 1801, and president of the Pennsylvania Society of the Cincinnati at his death.

IRVING, *ėr'vĭng*, EDWARD: 1792, Aug. 15—1834, Dec. 8; b. Annan, Dumfriesshire: minister of the Scotch Church. He studied at the Univ. of Edinburgh, and after completing his curriculum for the ministry, became assistant (1819) to Dr. Chalmers, then a minister in Glasgow. His sermons were not very popular. Chalmers himself was not satisfied with Irving's descriptive

and rhetorical pulpit style. In 1822, Irving received a call to the Caledonian Church, Hatton Garden, London, which he accepted. His success as a preacher in the metropolis was such as had never previously been witnessed. After some years, however, the world of fashion got tired of Irving; but it was not till his more striking singularities of opinion were developed that fashion finally deserted him. At the close of 1825, he began to announce his convictions in regard to the second personal advent of the Lord Jesus, in which he had become a firm believer, and which he declared to be near at hand. This was followed by the translation of a Spanish work, *The Coming of the Messiah in Majesty and Glory, by Juan Josafat Ben Erza,* professedly written by a Christian Jew but in reality the composition of a Spanish Jesuit. Irving's introductory preface is regarded as one of his most remarkable literary performances. In 1828 appeared his *Homilies on the Sacraments.* He now began to elaborate his views of the incarnation of Christ, asserting with great emphasis the doctrine of his oneness with us in all the attributes of humanity. The language which he held on this subject drew upon him the accusation of heresy; he was charged with maintaining the sinfulness of Christ's nature, but he paid little heed to the alarm thus created. He was now deep in the study of the prophecies; and when the news came to London early in 1830, of certain manifestations of prophetic power in w. Scotland (see IRVINGITES), Irving was prepared to believe them. Harassed, worn, baffled in his most sacred desires for the regeneration of the great Babylon in which he dwelt, branded by the religious public, and satirized by the press, the great preacher, who strove above all things to be faithful to what seemed to him the truth of God, grasped at the new wonder with a passionate earnestness. Matters soon came to a crisis. Irving was arraigned before the presbytery of London 1830, and convicted of heresy; ejected from his new church at Regent's Square 1832; and finally deposed 1833, by the presbytery of Annan, which had licensed him. His defense of himself on this last occasion was one of his most splendid and sublime efforts of oratory. The majority of his congregation adhered to him, and gradually a new form of Christianity was developed, commonly known as Irvingism, though Irving had really little to do with its development. Shortly afterward his health failed, and in obedience, as he believed, to the Spirit of God, he went to Scotland, and died of consumption, at Glasgow. Irving had all the natural gifts of a great orator; a comprehensive though not a clear or keen intellect; a temperament of poetic melancholy; an unfortunate love of the gorgeous and magnificent, especially in religious ritual; a continual craving for excitement; an intense moral earnestness, mingled with strong esteem of his own powers and his own mission; a zeal apostolic

in its fervor but pouring itself through narrow channels; and a natural predilection for the marvellous which betrayed him into a fanatical spiritualistic dealing with Christian truths and facts. See Carlyle's *Miscellaneous Essays*, and his *Reminiscences;* Mrs. Oliphant's *Life of Edward Irving* (London, 1862); Coleridge's *Notes on English Divines;* Hazlitt's *Spirit of the Age.*

IRVING, *ĕr'vĭng*, Sir JOHN HENRY BRODRIBB: actor: b. Kienton, Somersetshire, England, 1838, Feb. 6; d. Bradford, 1905, Oct. 13. He received a private school education, entered the office of an East India merchant in London 1852, studied elocution and made his first appearance on the stage at the Lyceum Theatre, Sunderland, England, as *Richelieu*, 1856, Sep. 29. In 1857 he went to the Theatre Royal, Edinburgh, where he remained 2½ years, playing with the leading actors of the day, and closing his engagement with his first performance of *Claude Melnotte.* In 1860 he played in Glasgow, then till 1865, Apr., in Manchester, part of 1866 in Liverpool and the remainder with Ellen Terry in Manchester, and 1867 filled his first London engagement at the St. James's Theatre as *Daricourt* in 'The Belle's Strategem.' In 1870 he appeared as *Digby Grant* in the comedy of the 'Two Roses' in the Vaudeville, London, for 300 consecutive nights, 1874, and Oct., 31, gave his first representation of *Hamlet* at the Lyceum Theatre, London. This ran 200 nights, and was followed by *Macbeth* 1875, *Othello* 1876, and *Richard III.* 1877. He opened the Lyceum Theatre, under his own management, 1878, Dec. 30, with *Hamlet*, and till his death retained control of the house and its company. In 1881, May, he produced 'Othello' in which he alternated the parts of the Moor and *Iago* with Edwin Booth; and subsequently produced 'The Merchant of Venice,' 'Much Ado About Nothing,' 'Romeo and Juliet,' 'Faust,' 'Twelfth Night,' 'Macbeth,' etc; in 1883 was given a public banquet in London prior to his departure with his company for a tour of the United States; 1884 made a second tour of the United States and addressed the students of Harvard Univ. on *The Art of Acting* (which was repeated at Oxford Univ. 1886, June 26); 1886 with Miss Terry made a third tour of the United States; and 1887–8 his fourth; 1889, Sep. 28 he revived in his own theatre, *The Dead Heart*, which had not been played in 25 years. He revisited the United States in 1893–94, 1895–96, and in 1903–04, his productions of *Robespierre* and *Dante* on his last tour being notable. Of his last great roles may be cited Becket in Tennyson's play of that name (1893), King Arthur in a play of that name (1895), Napoleon in 'Madame Sans-Gêne' (1897), the title role in his son's play of 'Peter the Great' (1898), and Robespierre in a play of that name (1899), specially written for him by M. Victorien Sardou, and the title role in 'Dante' (1903). He published *Impressions of America* (1884); lectured



WASHINGTON IRVING.

before the church of England Temperance Soc. on *Amusements*, defending the morality of the stage; received numerous decorations and other acknowledgments of his rare dramatic powers; and was a governor of the council of the Shakespeare Memorial Association. He died suddenly at Bradford, Eng., after a performance of his own adaptation of Tennyson's *Becket*, 1905, Oct. 13. His body was cremated, and his ashes were deposited in Westminster Abbey, near the tomb of Garrick.

IR'VING, WASHINGTON, LL.D: 1783, Apr. 3—1859, Nov. 28; b. New York; youngest son of William Irving, who had emigrated from Scotland, and settled in New York as a merchant before the Revolution. Washington Irving, at the age of 16, entered a law office; but he profited largely by his father's well-stocked library, Chaucer and Spenser being his favorite authors. New York, at this period, was a town of about 50,000 inhabitants, many of whom were descendants of the original Dutch settlers having quaint manners and customs, of which Irving was a curious observer. In 1804, with the excuse of a tendency to pulmonary disease, he visited, and travelled extensively in Europe; returned to New York 1807, and contributed a series of genial and humorous essays to a periodical called *Salmagundi*, with whose editorship and publication his elder brother, William Irving, was connected, being associated with James K. Paulding. In 1809, he wrote *A History of New York, from the Beginning of the World to the End of the Dutch Dynasty, by Diedrick Knickerbocker*, a burlesque chronicle written in so quiet a vein of humor, that it has sometimes been taken for a veritable history. It is the most American of his works, and shows the most of original power.

Having no inclination for law, he engaged in commerce with his brothers as a silent partner, but gave his time to literature, and in 1813, edited the *Analectic Magazine*, in Philadelphia. At the close of the war 1815, he visited England, where he was warmly welcomed by Campbell, whose biography he had written, and was introduced by him to Walter Scott. While he was enjoying his English visit, his commercial house, which had a branch at Liverpool, failed, and he was suddenly reduced to poverty, and the necessity of writing for his bread. The *Sketch-book*, portions of which had appeared in New York, was offered to Murray, and afterward to Constable, but was refused by both of these celebrated publishers. After an unsuccessful attempt of the author to publish it on his own account, Murray, on Walter Scott's recommendation, took the *Sketch-book*, paying £200 for the copyright, which he afterward increased to £400. It had a charm in its beauty and freshness, and was a surprise as the work of an American and was therefore received with great favor. Irving went to Paris, and, 1822, wrote *Bracebridge Hall*, and 1824 the *Tales of a Traveller*. He then spent much time at Madrid, translating docu-

ments connected with the life of Columbus. With these materials he wrote *History of the Life and Voyages of Columbus* (1828); *Voyages of the Companions of Columbus; The Conquest of Granada; The Alhambra* (1832), a portion of which was written in the ancient palace of the Moorish kings; *Legends of the Conquest of Spain* (1835); and *Mahomet and His Successors* (1849). In 1829, Irving returned to England as sec. to the U. S. legation. In 1831, he received the honorary degree LL.D. from the Univ. of Oxford; and next year returned to America, where he was received with great enthusiasm, and found honors of all kinds awaiting him. A visit to the Rocky Mountains produced his *Tour on the Prairies*. He contributed sketches of Abbotsford and Newstead Abbey to the *Crayon Miscellany*, and from the papers of John Jacob Astor, wrote *Astoria* (1837), and the *Adventures of Captain Bonneville;* also a series of stories and essays in the *Knickerbocker Magazine*, collected under the title of *Wolfert's Roost*. In 1842, he was appointed U. S. minister to Spain. In 1846 was published his *Life of Goldsmith;* and his *Life of Washington*, 1855–59: the last was intended as his great work, but did not afford the material needed for his poetical genius, and it therefore lacks the brilliancy and interest which we naturally associate with Irving's name. Irving was the first great ornament of American literature who became known on the other side of the sea. His works show no profound original research, but their artistic execution is faultless. Indeed, Irving is a classic as regards literary style. He is refined, clear, vivid, apt, and delicate; with a deliciously quaint humor, and a broad and rich human sympathy. His style has been called the reflection of his own moral nature; which was exquisite in courtesy and fidelity, and of lofty purity in all social relations. He never married, having held sacred the memory of an early love which death had blighted. An ed. of his works, 15 vols., reached a sale of 250,000 vols. He spent the last years of his life at Sunnyside, in his own 'Sleepy Hollow,' on the banks of the Hudson, near Tarrytown, with his nieces; and there he died suddenly of heart-disease. See the Life by his nephew Pierre M. Irving (5 vols. New York 1861–67). Consult also Warner, *Washington Irving* (1881); Laun, *Washington Irving: Ein Lebens- und Charakterbild* (1870); Richardson, *American Literature* (1887–8); Wendell, *A Literary History of America* (1900).

IRVINGITES, *er'ĭng-īts:* usual but improper designation of a small body of Christians who object to any designation which implies sectarianism, and therefore use no other name than the *Catholic Apostolic Church*. In the winter of 1829–30 the Rev. Edward Irving (q.v.), then a minister of the Scotch (Presb.) Church, Regent Square, London, delivered a series of lectures on spiritual gifts, in which he maintained that those which we are in

the habit of calling 'extraordinary' or 'miraculous' were not meant to be confined to the primitive church, but to be continued through the whole present dispensation. About the same time, as if to confirm the views of the great preacher, there occurred at Port-Glasgow, in w. Scotland, certain strange phenomena. It was alleged that miraculous acts of healing had been done, and that the apostolic gift of tongues had reappeared. After what was deemed a sufficient investigation on the part of some members of Mr. Irving's church, it was concluded that the manifestations of spiritual power were genuine. Similar manifestations soon occurred in his own church, which are also pronounced genuine. They were held to be of two kinds: (1) speaking in tongues; (2) prophesying. As the former bore no resemblance to any language with which men were conversant, it was believed to be strictly an 'unknown tongue,' the Holy Ghost 'using the tongue of man in a manner which neither his own intellect could dictate, nor that of any other man comprehend.' The latter, 'prophecying,' consisted chiefly of 'exhortations to holiness, interpretations of Scripture, openings of prophesy, and explanations of symbols.' After some time, Irving was deposed from his office for heresy by the Church of Scotland; and in the following year he died; but meanwhile the religious opinions with which his name is associated had been assuming a more definite and ecclesiastical shape. The final result was the *Apostolic Catholic Church*, the constitution of which is briefly as follows:

There are, as in the apostolic times, *four* ministries; (1) that of 'Apostle;' (2) that of 'Prophet;' (3) that of 'Evangelist;' (4) that of 'Pastor.' The apostles are invested with spiritual prerogatives; they alone can minister the Holy Spirit by the laying on of hands; to them the mysteries of God are revealed and through them unfolded to the church; and they decide on matters of order and discipline. Nothing that transpires in any church in the way of 'prophetic utterance' can be authoritatively explained save by them; and the various 'angels of the churches' are bound to bring all such utterances under their cognizance, in order that they may be rightly interpreted. The function of the 'prophet' has been above indicated. The work of an 'evangelist' consists mainly in endeavoring to 'bring in' those who are without. The 'angel' of the Catholic Apostolic Church corresponds with the bishop of other Christian denominations. The ministers of each full congregation comprise an angel, with a fourfold ministry (consisting of elders, prophets, evangelists, and pastors), and a ministry of deacons in charge of temporal matters. This ministry is supported by tithes, the people giving a tenth of their income for the support of the priesthood. Church affairs are managed by a council of ministers of all classes, whose selection and arrangement are conceived to have

been foreshadowed in the structure of the Mosaic Tabernacle.

The Catholic Apostolic Church does not differ from other Christian bodies in regard to the common doctrines of the Christian religion; it only accepts, in what it considers to be a fuller and more real sense, the *phenomena* of Christian life. It believes that the wonder, mystery, and miracle of the apostolic times were not accidental, but are essential to the divinely instituted church of God, and its main function is to prepare a people for the second advent of Christ. A very special feature of the Catholic Apostolic Church is its extensive and elaborate symbolism. In regard to the Lord's Supper, the doctrine of the objective presence is held, but both transubstantiation and consubstantiation are repudiated.

The Catholic Apostolic Church has established itself in England, Scotland, Canada, the United States, Prussia, France, Switzerland, Ireland, Belgium, Russia, Denmark, Sweden, Australia, and India. Nowhere has it gained many adherents, nor is it known to be increasing. Its churches in the United States number about 10; ministers, about 95, among whom are some men of unusual mental gifts and Christian excellence.

IRWIN, *ėr'win*, JARED: 1750–1818, Mar. 1; b. Mecklenburg co., N. C.: statesman. He removed to Burke co., *Ga.* when a boy; served in a Georgia regiment the greater part of the Revolutionary war, and afterward in a campaign against the Creek Indians; was a member of the first legislature of Georgia after the war, and served from 1790 till 1811 excepting when governor 1796–98 and 1806–9, being in both branches and several times pres. of the senate; was a member of the state constitutional conventions 1789, 95, and president 96; and during his first term as governor signed the act repealing the famous 'Yazoo law,' which had been enacted by a previous legislature through corrupt means.

IS, v. *ĭz* [AS. *is;* Ger. *ist;* L. *est;* Gr. *esti;* Skr. *asti*]: 3d pers. sing. pres. of the verb *be.*

ISAAC, *ī'zak* [Heb. 'he laughs']: Hebrew patriarch and pastoral chief: son of Abraham and Sarah, and half-brother of Ishmael; born when both his parents were advanced in age. Isaac's character has been differently interpreted. What has been generally deemed his mild and gentle disposition and simple pastoral piety, a few have termed weakness. He certainly lacked the energy and enterprise of his father, the calculating wisdom of his son Jacob, and the impulsive self-assertion of his son Esau; but his blameless unobtrusive ways draw our sympathy and esteem. He was unwise in his dealings with his two sons—showing partiality. He was upright; and by successful agriculture became rich in flocks and herds. He died at Hebron, aged 180 years, leaving two sons, Jacob and Esau. The Midrash ascribes to him, in

allusion to Gen. xxiv. 63, the institution of the afternoon prayer.

I'SAAC I., COMNENUS, Roman Emperor of Constantinople; first of the family of the Comneni who attained that dignity: son of Manuel Comnenus, an officer; d. 1061 (reigned 1057–59). His father Manuel, his brother John, and himself were employed in important military and civil capacities by Basil II. (976–1025); but during the reign of the latter's imbecile and tyrannical successors, in whose eyes it was criminal for any one to excel in wisdom and ability, Isaac was exposed to considerable danger. Such, however, was his prudence, and the affection of the people for him, that the emperors unwillingly suffered him to live unmolested; and on the deposition of Michael VI. (reigned 1056–57), Isaac was elevated to the vacant throne. He was one of the most virtuous emperors of the East.

ISAACS, ABRAM SAMUEL, clergyman, educator, and editor: b. New York City, 1852, Aug. 30. Graduated from New York University, 1871, receiving degree of A.M. in 1873, and PH.D. in 1878; he also graduated from the Univ. of Breslau, Germany in the latter year; and studied also three years at Breslau Jewish Theological Seminary. From 1885–94 he was professor of Hebrew in New York University and professor of German from 1888–95; from 1895–1906 he was professor of German Literature and in 1906 was appointed professor of Semitic languages. He was editor of the *Jewish Messenger* from 1878–1903; he has also served as Rabbi in Paterson, N. J. (1896–1905), besides contributing largely to magazines and reviews, publishing some books, and lecturing extensively. Among his publications are the following: *Moses Chaim Luzzatto, A Modern Hebrew Poet; Stories from the Rabbis.* He has contributed to *Standard Dictionary, Appleton's Cyclopedia of Biography, Jewish Encyclopedia, Encyclopedia Americana,* and THE EDITOR'S ENCYCLOPEDIA and DICTIONARY.

ISABEL-COLOR, n. *ĭz'a-bĕl kŭl'er* [generally referred to Isabel of Austria, daughter of Philip II. of Spain and wife of Archduke Albert of Austria, who, 1601, made a vow not to change her linen until her husband had taken Ostend, which he was besieging; the town, however was not taken until 1604, by which time her linen had assumed a dingy hue], pale brownish-yellow color; dull yellow.

ISABELLA, *ĭz-a-bĕl'a* of Castile, Queen of Spain: 1451, Apr. 23—1504, Nov. 24 (reigned 1474–1504); daughter of John II., King of Castile and Leon; thus a descendant of the famous John of Gaunt, Duke of Lancaster. In 1469, she married Ferdinand V., surnamed 'the Catholic,' king of Aragon. On the death of her brother, Henry IV., she ascended the throne of Castile and Leon, to the exclusion of her elder sister Joanna.

She had won the support of a great part of the states of the kingdom during her brother's life, and the victorious arms of her husband compelled the consent of the rest (see FERDINAND). Isabella was a woman of remarkable energy and talent, and possessed beauty and much winning grace, though proud, ambitious, and deficient in true womanly gentleness. She was always present in meetings of council, and insisted on the use of her name with that of Ferdinand in all public documents. Her name is honorably associated with that of Columbus, whose adventurous scheme for discovery of the new world she favored and aided when all around her were discrediting it. She died at Medina del Campo, after having exacted from her husband, of whom she was always jealous, a promise, confirmed by oath, never to marry again.

ISABEL'LA II. (MARIA ISABEL LUISA), Ex-Queen of Spain: b. Madrid, 1830, Oct. 10 (reigned 1833–68); d. Paris, France, 1904, April 9; elder daughter of Ferdinand VII. by his fourth wife, Maria Christina, of the Two Sicilies. By a decree which set aside the Salic law in Spain, and was confirmed by the Cortes, 1830, Isabella became heiress-apparent to the throne, which she ascended on the death of her father, her mother being appointed queen-regent. An insurrection in favor of her uncle, Don Carlos (q.v.), who, according to the Salic law, would have succeeded to the throne, immediately broke out in the n.e. provinces, and raged with great violence seven years, but was ultimately suppressed by the aid of Britain, France and Portugal. During this tumultuous epoch, effective internal administration was impossible, and it was necessary to conciliate as far as possible all parties, in order to prevent desertions to the Carlists. Before the revolt had been crushed (in 1839), politicians had begun to divide into two classes, *Moderados*, or 'conservatives,' and *Exaltados*, or 'liberals;' and though the queen-regent sided with the former party, she found it necessary to enlarge the liberal constitution of 1834, and ultimately (1837) to re-establish the constitution of 1812. The attempts of the Moderados 1839 to inaugurate a more narrow policy failed, and Maria Christina was forced to flee to France, leaving the regency and the care of the young queen to Espartero (q.v.). In 1843, the queen was declared by the Cortes to have attained her majority; and this was soon followed by the return of the queen-mother, the military dictatorship of Narvaez, and an anti-liberal policy. The question known as the 'Spanish Marriages,' which at that time agitated the different courts of Europe, was settled by French influence, the queen marrying her cousin, Don Francisco d'Assisi, eldest son of Ferdinand VII.'s youngest brother (1846); while her sister, Maria Ferdinand Luisa, espoused the Duke of Montpensier, fifth son of Louis Philippe. This marriage of the queen, based wholly on the political interests of

the party in power, has been fruitful of domestic annoyances, estrangements and reconciliations rapidly succeeding one another. After eight years of authority, during which he had repressed all liberalism with an iron hand, and foiled the intrigues both of the Carlists and the king-consort, Narvaez gave place to Murillo (1851), who began by promising liberal reforms, and agreed to a concordat with the pope. A change to almost purely absolute government 1853, was followed by the banishment of many chiefs of the constitutional party, and a formidable rising of the army took place. The queen-mother fled to France, and Espartero was once more put at the head of an administration in which liberal principles held sway. But the queen disapproving of his policy, he resigned in favor of O'Donnell, 1856, who was soon afterward supplanted by Narvaez; and the latter, in turn, had to make way for a liberal government, 1857. In 1858, O'Donnell was restored to power, and with the exception of a brief interval (1865, June), in which Narvaez was president of the council, maintained himself in the premiership till his death, 1867. The chief foreign events of Isabella's reign were—repeated negotiations of the United States with Spain, with the view of purchasing the island of Cuba; the rectification of the Pyrenean frontier; the successful war with Morocco (q.v.); the annexation and subsequent evacuation of San Domingo (see HAYTI); and the discreditable quarrels with the republics of Chili and Peru. The nation became more and more impatient under the despotic rule of the last years of Isabella's reign; and at length, 1868, Sep., a revolution broke out, which ended in the formation of a Republican provisional government, and the flight of Isabella to France. In 1870, she renounced her claim to the throne in favor of her son, Alfonso (chosen king 1875). She returned to Spain 1878.

ISABEL'LA OF ENGLAND. See EDWARD II; EDWARD III.

ISABEL'LA THE CATH'OLIC, ORDER OF: Spanish order of knighthood, founded by Ferdinand VII., 1815, as a reward of loyalty, and for defense of the possessions of Spanish America. It is now conferred for all kinds of merit. The sovereign is the head of the order, which is divided into the three classes of Grand Crosses, Commanders, and Knights.

ISABELLINE-BEAR, n. *ĭz-a-bĕl'lĭn-:* in *zool., Ursus isabellinus:* lighter variety of the Syrian bear. It it of a yellowish-brown color, but varies according to the season of the year; found in the Himalaya Mountains, and feeds chiefly on vegetables; called also the Indian White Bear.

ISABEY, *ē-zâ-bā',* JEAN BAPTISTE: 1767, Apr. 11—1855, Apr. 18; b. Nancy, France: portrait painter. He studied painting with David with the intention of applying himself to historical work, but began his art career with crayon portraits, and achieved a wide renown as a

miniature painter. His painting of Napoleon I. reviewing his troops in the court of the Tuilleries won the friendship of the emperor and the appointment of court-painter. The chief personages of France and of Europe sat to him. Beside a large number of portraits, he painted two notable historical and portrait-group works: the *Tablcau des Marecheaux* (Napolcon and his principal generals), and the *Conference at Vienna* after Napoleon's abdication.—His son, Louis Gabriel Isabey (1804–86), was an eminent painter of marine views.

ISABNORMAL. See Isothermal Lines.

ISAEUS: one of the 'Ten Attic Orators,' though probably a native of Chalcis, made his home in Athens, and there, in the first half of the 4th c. B.C., we find him actively engaged in the profession of a speech-writer for clients in the law courts. He seems also to have taught rhetoric, to Demosthenes among others, according to one tradition. We have from him a dozen orations dealing with inheritance cases, two of them in a fragmentary condition. The best edition is that of H. Buermann (Berlin 1883). There is an English translation by W. Jones (London 1779).

ISAGOGIC, a. *ī'să-gŏj'ĭk*, or Isagog'ical, n. *-ĭ-kăl* [Gr. *eisăgōgĭkoos*, introductory—from *eis*, into; *ăgō*, I lead]: introductory; belonging to an introduction.

ISAGON, n. *ī'să-gŏn* [Gr. *īsŏs*, equal; *gōnĭă*, an angle]: a figure whose angles are equal.

ISAIAH, *ī-zā'yâ* [Heb. *Ycshayahu*, 'Salvation of Jehovah']: grandest and most sublime of the Hebrew prophets: son of one Amoz. He uttered his oracles in the reigns of Uzziah, Jotham, Ahaz, and Hezekiah, kings of Judah. Regarding his outward life, almost nothing is known. He appears to have resided at Jerusalem, in the vicinity of the temple; was married, and had three sons, given him, he says, 'for signs and for wonders in Israel.' The period of his death is not known, but according to a rabbinical legend, he was sawn asunder by order of King Manasseh, who abhorred his oracles (of Jos. Ant. x. 31). If this statement is well founded, Isaiah must have been nearly 100 years old when he was thus murdered.—The prophecies of Isaiah, viewed in their literary aspect, consist of a series of 'visions' beheld at different times, and arranged neither exactly in chronogical nor in material order. It is believed by many that some other than Isaiah compiled or edited the whole book; and probably a majority of scholars of note see signs of a later hand in some fragmentary passages here and there which they consider additions by some compiler (e.g. xxxvi. 38).—The grand controversy, however, is not concerning the arrangement or compiling of these prophecies, but concerning their authorship. Did they all proceed from the same person, or are different authors discernable?

Orthodox critics maintain the unity of authorship, and assert that even if a later editor were proved, Isaiah certainly wrote the whole 66 chapters. The first who doubted this was the German scholar Koppe (1779) who suspected that the last 27 chapters (xl.–lxvi.) were the work of a later hand. He was followed by Döderlein, Eichhorn, and Justi, and the same view has been substantially adopted by Paulus, Bertholdt, De Wette, Gesenius, Hitzig, Knobel, Umbreit, and Ewald. The chief arguments for a 'Deutero-Isaiah' (a second Isaiah) i.e., for the last part of the book are: (1) That the subject-matter of these 'burdens,' chaps. xl–lxvi, relates to what happened long (at least 100 years) after Isaiah's death, viz., the redemption of the Jews from captivity, consequent on the overthrow of the Babylonian monarchy by the Medo-Persian army. (2) That the writer speaks of the exile as something present, and of the desolation of Judah as having already taken place. (3) That Cyrus is mentioned by name, and an intimate knowledge exhibited of his career. (4) That an extraordinarily minute acquaintance with the condition and habits of the exiles is shown. (5) That the sentiments are far more spiritual than in the earlier chapters. (6) That the style is totally different, being more smooth, flowing, rhetorical, and clear. To these objections Hengstenberg, Hävernick, Keil, Henderson, Jahn, Möller, Alexander, and others have replied. It is pointed out that the above arguments 1–4, amount simply to *a denial of the possibility of prediction of future events by Divine revelation.* If these arguments prove that the writer must have been an eye-witness of the captivity or the exile, or else have written after those events, then they prove equally that he must have lived at the time of the crucifixion of Christ, or after it, since he pictures his humiliation, desertion by his people, sufferings and death with a particularity equal to that in his depicting of the exile of the Jewish people. Arguments 5, 6, are met with the averment that in the earlier chapters are found the germs of the chief things in the later chapters, and that the later show only the natural rise in fulness and sublimity as the scope of the prophecy broadens. Attention is called to the fact also that in all history or tradition concerning the Hebrew canon, no hint is found of an addition to Isaiah's prophecy, or of any change; while the 27 chapters are too remarkable to have been added without some faint trace of such an act; likewise to the fact that in the Septuagint translation (abt. B.C. 250) Isaiah's prophecy comprises the whole 66 chapters. Moreover, the fact is noted that the New Testament writers quote from Isaiah portions of the last 27 chapters: e.g. in Lk. iv. 18, from Is. lxi. 1; in Acts viii. 32, from Is. liii, 7; in Jn. xii. 38, and in Rom. x. 16, from Is. liii. 1; in Rom. x. 21, from Is. lxv. 2. This question is of much historical and linguistic interest; but even if it were possible to

decide it in denial of Isaiah's authorship, the decision would in no wise invalidate the inspiration and authority of this prophetic book as a whole.

Among the many commentators on Isaiah are Jerome, Vitringa, Calvin, Lowth, Henderson, Calmet, Hitzig, Rosenmüller, Gesenius, Delitzsch, Hengstenberg, Alexander, and T. K. Cheyne.

ISAR, *ē'zĕr*, or ISER: river of Germany, rising in the Tyrol, n. of Innsbruck, entering Bavaria, then flowing generally n. and n.e., and joining the Danube at Deggendorf, after a course of about 180 m. Munich and Landshut are on its banks. In the first part of its course, it is an impetuous mountain torrent; and even after it leaves the Alps, it has many rapids and islands, but for much of its course it is navigable for boats. Much wood is floated down the Isar from the mountains.

ISATINE, or ISATIN, n. *ī'să-tĭn* [Gr. *isatis*, woad]: a yellow coloring matter derivable from indigo in the form of deep yellowish-red prismatic crystals. ISATIS, n. *ī-sā'tĭs*, the woad, a tall plant with a yellow flower yielding a blue dye; the *Isātis tinctōrĭă*, ord. *Cruciferæ*.

ISAURIA, *ĭ-saw'rĭ-a:* ancient district in Asia Minor, bounded n. by Phrygia, e. by Lycaonia, s. by Cilicia, and comprising a barren upland plain with mountains in the s. The district is supposed to have contained but few towns, chief of which was Isaura, the capital, which was rebuilt by Amyutas. Extensive ruins, consisting of a massive wall with hexagonal towers, a triumphal arch, and tombs, are still seen near the town of Hajilar, 45 m. w. of Karaman. The people, believed to have been a daring lawless race, owing allegiance to either the Persian or Macedonian monarchy, appear in history as having been driven to their mountain strongholds and forced to submission by the pro-consul P. Servilius; as giving the Roman empire so much trouble that it was decided to leave them alone; as being a second time subjugated in the reign of Justinian; and as giving two occupants to the Byzantine throne. Zeno, 474–495, and Leo III., 717–741.

ISCHÆMIA, n. *ĭs-kē'mĭ-a* [Gr. *ischaimos*, stanching blood; *ischō*, I hold, check, or curb; *haima*, blood]: local anemia caused by obstruction to the flow of blood in the principal artery of a part; retinal Ischæmia may cause sudden and complete blindness, owing to loss of the blood-supply to the retina.

ISCHIA, *ĭs'kē-â* (ancient *Ænaria*): island between the Bay of Naples and the Bay of Gaeta; about 37 sq. m. Pop. 28,000. Ischia is a favorite summer resort, and is noted for the excellence of its mineral waters, and numerous springs, great richness of soil, exquisite flavor of its fruits and wines, and enchanting scenery. Its highest point is the volcanic Monte Epomeo, 2,574 ft. above sea-level, of which the eruptions have been disas-

trous; especially that of 1302. The Lake of Ischia occupies an extinct crater of the volcano, and abounds in fish. Casamicciola (pop. 4,000 but crowded from May to Sep. when its climate is delicious, by summer visitors) is the largest town, others being Borgo d'Ischia, Forio, and Lacco Ameno. In 1881, Casamicciola was nearly destroyed by two earthquake shocks. A still more dreadful catastrophe befel it 1883, Sep. 28, when the town was utterly overwhelmed, only four or five buildings being left standing. Four or five thousand persons lost their lives, very many being the sojourners in the numerous hotels. Some scientists affirm that the cause of the ruin was not so much an earthquake, as the subsidence of the surface of the ground caused by continuous wearing away of the subsoil by the hot subterraneous springs.

ISCHIATIC, a. *ĭs'kĭ-ăt'ĭk* [Gr. *ischiŏn*, the hip]: pertaining to the hip. ISCHIAGRA, n. *ĭs-kĭ-ăg'ra* [Gr. *ischion*, the hip joint; *agra*, hunting, catching, seizure]: in *path.*, gout in the hip-joint; sciatica. ISCHIUM, n. *ĭs'kĭ-ŭm*, the hip-bone.

ISCHURY, n. *ĭs'kū-rĭ*, or ISCHU'RIA, n. *-kū'rĭ-ă* [Gr. *ischo*, I stop or retain; *ouron*, urine]: the suppression or stoppage of urine. IS'CHURET'IC, n *-rĕt'ĭk* a medicine adapted to relieve ischury: ADJ. having the quality of relieving ischury.

ISCHYPTERUS, n. *ĭs-kĭp'tĕr-ŭs* [Gr. *ischus*, strength of body; *pteron*, a fin]: in *geol.*, a genus of ganoid fishes with smooth rhomboidal scales.

ISCHYROMYIDÆ, n. *ĭs-kīr-ō-mī'ĭ-dē* [Gr. *ischuros*, strong; *mus*, a mouse]: in *paleon.*, family of *Rodentia*, containing only one species, the Ischyromis. It resembles the musk-rat, but has closer affinity to the squirrels, and certain resemblances to the beaver.

ISEO, *ē-sā'ō*, LAKE, or LACUS SEVINUS, *lā'kŭs sē-vī'-nŭs:* lake of n. Italy, between the provinces of Bergamo and Brescia; extreme length n. to s. about 20 m.; average breadth, 6 m.; greatest depth, 984 ft. On its banks is the town of ISEO. The lake is fed by the rivers Oglio and Borlazzo. The surrounding scenery is very interesting, broken into picturesque heights, and studded with fine villas, vineyards, and olive-gardens.

ISÉRE, *ē-zār'*: river of the s.e. of France, rising in Savoy at the w. base of Mount Iseran, flowing generally s.w. through Savoy, and through the dept. of Isère and Drome, and joining the Rhone 8 m. above Valence. Its entire length is about 190 m., for the last fifty of which it is navigable, though with difficulty, as its channel is interrupted by shoals and islands.

ISÉRE': department in the s.e. of France, bounded n. and w. by the river Rhone, e. by the dept. of Savoie, s. and s.e. by the depts. Drome and Hautes-Alpes; 3,200 sq. m., of which nearly a half is in arable land, and a

fifth in wood. The surface is level in the n.w., but becomes mountainous toward the south, where the scenery is very imposing. Mount Olau, on the s.e. border, is 12,664 ft. high. The chief rivers besides the Rhone, are the Isère, from which the dept. has its name, and its affluents the Drac and Romanche. The dept. is one of the richest of France in mineral productions: mines of iron, lead, copper, and coal are worked, and gold and silver occur. The vine is carefully cultivated in the valleys; 5,000,000 gallons of wine are produced annually. Arrondissements, Grenoble, La Tour-du-Pin, St. Marcellin, and Vienne: cap. Grenoble. Pop. (1901) 568,693.

ISERIN, or ISERINE, n. *ī'zėr-ĭn* [from the river *Iser*, in Silesia, near whose source it was first found]: a mineral of an iron-black color and of a bright metallic lustre, found in angular grains, rolled pieces, or in the form of black sand; titaniferous iron-sand.

ISHIM, *ĭsh'ĭm:* river of Siberia, affluent of the Obi (q.v.).

ISHMAEL, *ĭsh'mā-ĕl* [Heb. *Yishmael*, 'God hears']: son first-born of Abraham, by Hagar, Egyptian handmaid of his wife Sarah. His character was foretold before his birth by an angel, who was sent to Hagar sitting by a well in the wilderness on the way to Shur, whither she had fled to avoid the harsh treatment of her mistress: 'And he will be a wild [literally, 'a wild-ass-'] man; his hand against every man, and every man's hand against him' (Gen. xvi. 12). Expelled from his father's house, with his mother, when he was about the age of 15, he went into the southern wilderness where he grew up to manhood, and became famous as an archer. It was predicted that he should become a great nation: this 'great nation' is commonly believed to be the Arabian; and there is no reason for doubt that at least the *northern* Arabs—the wild Bedouins who roam over the great wastes between the peninsula of Sinai and the Persian Gulf—may, to a certain degree, be descendants of Ishmael. There is, however, no ground for the notion that the founders of the great Joktanite and Cushite monarchies in s. Arabia were of Ishmaelitic origin; and the description given in Scripture of the character and habits of Ishmael and his descendants does not in the least apply to these monarchies. The Bedouins of n. and central Arabia, on the other hand, are full of Ishmaelitic traditions. Mohammed asserted his descent from I.; and the Mohammedan doctors declare that Ishmael, and not Isaac, was offered up in sacrifice—transferring the scene of this act from Moriah in Palestine to Mount Arafât near Mecca; and that Ishmael lies buried with his mother in the Kaaba in Mecca.

ISH'MONIE': the petrified city in Upper Egypt, full of men and women turned to stone.

ISHPEMING, *ĭsh'pėm-ĭng:* city in Marquette co., Mich.,

on the Duluth, S. S. & A., the Chicago, M. & St. P., and the Chicago and Northwestern railroads; 3 m. w. of Negaunee, 15 m. w.s.w. of Marquette. It contains several churches, school-houses, hotels, banks, and foundries, machine shops, and blast-furnaces. It was settled about 1856 and received its first charter in 1857. It is situated in the great iron ore region of Michigan, and is the centre of the iron ore mining industry of the State. Gold and marble are found in the vicinity and an excellent building stone. The manufactures are chiefly the machinery used in mining. Municipal affairs are administered by a mayor and city council of 20 members elected annually. The population is composed mainly of Scandinavians and English. Pop. (1910) 12,448.

ISIAC TABLE, *ī'sĭ-ak:* monument much esteemed and quoted by archæologists previous to the discovery of hieroglyphics, being a flat rectangular bronze-plate, inlaid with niello and silver, about 4 ft. 8 inches long, by 3 ft. high. It was sold by a soldier of the Constable de Bourbon to a locksmith, and bought of the same by Cardinal Bembo 1527, passed after his death to Modena, and finally to Turin, where it is now deposited. It consists of three rows of figures of Egyptian deities and emblems. Its object was long supposed to have been votive, or even to have been the nativity of the Emperor Trajan; but it is now recognized as a very late or spurious monument.

ISIDOID, a. *ī'sĭd-oyd* [*isis*, a genus of jointed corals: Gr. *isos*, equal, similar; *eidos*, resemblance]: in *bot.*, covered with a dense mass of conical soredia, as the surface of lichens. ISIDIOSE, a. *ī-sĭd'ĭ-ōs*, having powdery, coralline excrescences. ISIDIIFEROUS, a. *ĭ'sĭd-ĭ-ĭf'ėr-ŭs* [L. *fero*, I bear]; having isidiose excrescences. ISIDIUM, n. *ī-sĭd'ĭ-ŭm*, coral-like soredia on the surface of some lichens—see Cooke's Manual of botanic terms.

ISIDORE OF SEVILLE, *ĭz'ĭ-dōr ŏv sė-vĭl'* (ISIDORUS HISPALENSIS): one of the most distinguished ecclesiastics in the latter part of the 6th and earlier part of the 7th c.; d. 636. He was b. at Carthagena, son of the prefect Severianus. He is particularly remarkable as among the earliest representatives of the church of Spain, and of that great movement in the Western Church by which the doctrinal and moral system of Christianity was brought into harmony with the habits and institutions of those various races and nationalities which, by successive immigrations and wars, were eventually erected into the Hispano-Gothic kingdom, which exercised so powerful an influence on Latin Christianity. Two of his brothers, Fulgentius and Leander, were, like himself, bishops, the first of Carthagena, the second, succeeding Isidore in the see of Seville. The episcopate of Isidore is notable for the two half-ecclesiastical, half-civil councils of Toledo 619 and 633, held under his presidency, the canons of which may be said almost to have

formed the basis of the constitutional law of the Spanish kingdoms, both for church and for state, till the great constitutional changes of the 15th c. He also collected with the same object all the decrees of councils and other church laws anterior to his time. His death forms one of the most remarkable scenes in early Christian history. When he became sensible of the approach of death, he summoned his flock to his bedside, exhorted them to mutual forbearance and charity, prayed their forgiveness for all his own deficiencies in his duty, and directed all his property to be distributed among the poor. His works, which are in the most various departments of knowledge—theological, ascetical, liturgical, scriptural, historical, philosophical, and even philological and scientific—were published first in 1580; but the most complete edition is that of Arevali, 7 vols. 4to (Rome 1797–1803). We are indebted to Isidore for many fragments of Greek and Latin authors; among these are several of whom hardly any other remains have been preserved. Isidore's writings, though unsystematic, without originality, and of little inherent value, served an important purpose as the basis of instruction for students in the later Dark Ages (7th–10th c.)—preserving some remnants of the earlier learning.

ISIDORIAN DECRETALS, *ĭz-ĭ-dō′rĭ-an dē-krē′talz*, called also FALSE DECRETALS: spurious compilation of the 9th c., which, by a singular combination of circumstances, obtained currency in the Western Church, and continued for several centuries in unquestioned authority. Till the 9th c., the only authentic collection of decretals, that of Dionysius Exiguus, commenced with the decrees of Pope Siricius in the end of the 4th c. The so-called Isidorian Decretals stretch back through the predecessors of Siricius up to Clement himself, and comprise no fewer than 59 decrees or epistles before the time of Siricius. In a later part of the Isidorian collection, moreover, are interpolated nearly 40 similar documents unknown prior to that compilation. All these documents are presented not merely as authentic, but as the genuine production of the particular popes to whom they are attributed. The subject-matter of these decretals is most diversified, comprising the authority and privileges of the pope, the whole system of the hierarchy, with the relations of its several orders to each other and to the common head. In all, there is a strong and systematic assumption of the papal supremacy; yet it is not probable that the direct object of the author was the exaltation of the papal prerogative. It is much more likely that the object was to protect the rights of bishops against the arbitrary rule of the metropolitans. Dean Milman thinks that the author believed that he 'was not asserting for Rome any prerogative which Rome herself had not claimed' (*Latin Christianity*), II., 378. Rom. Cath. historians, indeed, go further, and while they ad-

mit and denounce the clumsy fraud, contend that the easy and universal acceptance which the Isidorian Decretals met, furnishes the strongest presumption that the discipline which they elaborated and methodized, was already in full possession, though without the formal and written law which the daring adventurer attempted to provide in decretals of the early pontiffs.

It is strange that the author, place, and date of this singular forgery are still unknown. It is certain that it did not come from Rome; and the most probable conjecture assigns its origin to Mentz, between 840 and 847. It was introduced under the name of Isidore of Seville (q.v.) as a part of the genuine collection known as his, and was believed to have been brought from Spain by Riculf, Abp. of Mentz. It is hardly possible, in an age of discussion like ours, to doubt that, when the Isidorian Decretals first appeared, even the most superficial inquiry or the slightest critical investigation of historical sources, would have sufficed to detect the fraud. 'It is impossible,' says Dean Milman, 'to deny that at least by citing without reserve or hesitation, the Roman pontiffs gave their deliberate sanction to this great historic fraud;' yet it is equally impossible to fix the limit beyond which, in an age so uncritical, literary or historical credulity might not be carried without provoking its susceptibility, or disturbing its peace.

From the first circulation of the false decretals till the 15th c., no doubts were raised regarding them. Nicholas of Cusa and Cardinal Turrecremata were the first to question their genuineness; but after the Reformation the question was fully opened. The centuriators of Madgeburg demonstrated their utterly apocryphal character. A reply was attempted by Father de la Torre; but the question was finally settled by Blondel. See Milman's *Latin Christianity*, ii. 370–380; Walther's *Kirchenrecht*, p. 155; Gfrörer's *Kirchengeschichte*.

ISINGLASS, n. *ī'zĭng-glăs* [Ger. *hausenblase*, the bladder of the sturgeon—from Ger. *hausen*; Dut. *huizen*, a sturgeon, and Ger. *blase;* Dut. *blas*, a bladder]: a pure form of gelatine, whitish and firm in texture, prepared mainly from the sounds or air-bladders of different species of fish, especially of the Russian sturgeon, and, in the U. S., of the cod, sturgeon, hake, etc. Besides Russia, from which it has been principally obtained, the United States and Canada, Brazil and the E. Indies furnish considerable quantities to commerce, as do also Manila and the W. Indies. Isinglass receives its different shapes in the following manner: The sounds are taken from the fish while sweet and fresh, slit open, washed from their slimy matter, divested of a very thin membrane which envelops the sound, and then exposed to stiffen a little in the air. In this state they are formed into rolls about the thickness of a finger, and in length according to the intended size of the staple; a thin mem-

brane is generally selected for the centre of the roll, around which the rest are folded alternately, and about half an inch of each extremity of the roll is turned inward. Boiled in milk, it forms a mild nutritious jelly, and is thus sometimes employed medicinally. It is used in making court-plaster, cement, mock pearls, and many other articles, also in clarifying fermented liquors, for improving soups, jellies, etc., and as sizing for linens, silk, gauzes and other fabrics.

ISIS, n. *ī'sĭs* [Celtic, *uisg;* Gael. *uisge*, water]: another name for the river Thames, but really forming its latter part thus L *Tam-esis*, and signifying 'broad Isis or Water.' See THAMES.

ISIS, n. *ī'sĭs* [Gr. *isos*, equal, similar]: a genus of jointed corals.

ISIS. See PLANETOIDS.

ISIS, n. *ī'sĭs:* one of the chief deities in the Egyptian mythology, the mother of Horus, and sister and wife of Osiris. By the Egyptians she was called *Hes*, and said to be daughter of *Seb* or Chronos, and Nu or Rhea; according to other versions, of Hermes and Rhea; and to have been born on the 4th day of the Epagomenæ, or of the five days added to the Egyptian year of 360 days. After the murder of Osiris by Typhon, and the throwing of him in a coffin into the Tanitic mouth of the Nile on the 17th Athyr, Isis was informed of the deed by Pans and Satyrs, and went into mourning at Coptos; and hearing from some children where the chest had been thrown, proceeded to seek for it in company with Anubis, and discovered it inclosed in a tamarisk column in the palace of Malcander, at Byblos; and sitting down at a fountain in grief, was discovered by the ambrosial scent of her hair, and invited to the court by the Queen Astarte, to nurse her children. One of these she fed with her finger and endeavored to render immortal by placing him in flames, while she herself, under the form of a swallow, flew round the column and bemoaned her fate. Having obtained the column, Isis took out the chest of Osiris, wrapped it in linen, and lamented so deeply, that the youngest of the queen's sons died of fright. She then set forth with the chest and eldest son to Egypt, dried up the river Phædrus on her way, and killed with her glances the eldest son, named Maneros, who had spied her secret grief in the desert. Having deposited the chest in a secret place, she proceeded to Buto to Horus; but Typhon discovered the chest, and divided the body into 28 or 26 portions, and scattered it over the country. These the Goddess again sought, and found, except the phallus, which had been eaten by fish; and wherever she found any of the limbs, she set up a tablet, or sent an embalmed portion, deposited in a figure of the god, to the principal cities of Egypt, each of which subsequently claimed to be the true birthplace of Osiris.

COLONNADES OF THE TEMPLE OF ISIS, ISLAND OF PHILAE

After the battle of Horus and Typhon, Isis liberated Typhon, and had her diadem torn off, and replaced by one in the shape of a cow. She was the mother of Haroeris by Osiris before her birth, and of Harpocrates after the death of Osiris. She buried Osiris at Philæ. The monarch Rhampsinitus played at dice with her in Hades. Her soul was supposed to have passed into the star Sothis or Sirius. Her worship was universal throughout Egypt, but had its particular seat at Philæ and at Bubastis, where a special festival was celebrated to her; and her tears were supposed to cause the inundation of the Nile. Another festival was celebrated to her at the harvest.

In the monuments, she is called the goddess-mother, mistress of heaven, sister and wife of Osiris, and nurse of Horus, mourner of her brother, eye of the sun, and regent of the gods. In her terrestrial character, she wears on her head the throne which represented her name; in her celestial, the disc and horns, or tall plumes. She is often seen suckling Horus; sometimes she has the head of a cow, indicating her identity with the cow Athor, of whom the son was born. Occasionally, she is identified with other female deities, such as Pasht. On her head, she wears the vulture symbol of maternity. Her attributes were assumed by the queens of Egypt; and Cleopatra sat and gave responses in the character of the youthful Isis.

The worship of Isis was introduced into Rome by Sulla (B.C. 86) from Tithorea, and shared the fate of that of other Egyptian deities, being associated with that of Serapis, Anubis, and others, and the temples from time to time destroyed. It flourished under the Flavians and Hadrian. At this time Isis was represented with a sistrum or rattle, a bucket, and a dress with a fringed border knotted at the chest. On the Alexandrian coins Isis appears as *Pharia,* before the Pharos, holding a full sail. The festivals, seclusion, rules of chastity, attracted many followers, but the worship was considered not altogether reputable by the Romans. It was more extended and respected in Asia Minor and the provinces, but fell before Christianity (391). Isis was worshipped as the giver of dreams, and in the two-fold character of restorer of health and inflicter of diseases.

The myth of Isis, as given by Plutarch, appears to be a fusion of Egyptian and Phœnician traditions, and the esoterical explanations offered by that writer and others show the high antiquity and unintelligibility of her name. She was thought to mean the cause, seat, or the earth, to be the same as the Egyptian Neith or Minerva, and Athor or Venus; to be the Greek Demeter or Ceres, Hecate, or even Io. Many monuments have been found of this goddess, and a temple at Pompeii, and a hymn in her honor at Antioch. The representations of her under the Roman empire are most numerous, Isis having, in

the pantheistic spirit of the age, been compared with and figured as all the principal goddesses of the Pantheon.—Plutarch, *De Iside;* Herod. ii. c. 59; Ovid, *Met.* ix. 776; Bunsen's *Egypt's Place,* i. p. 413; Wilkinson, Sir G., *Mann. and Cust.* iii. 276, iv. 366; Birch, *Gall. Ant.* p. 31.

ISKANDEROON. See ISCANDERÛN.

ISLA DE LEON, *ēs lâ dā lā-ōn′:* island on the s. coast of Spain, in the Atlantic Ocean, belonging to the province of Cadiz, and separated from the mainland by Santi Petri channel. It is 10 m. long, 2 m. wide, and contains the cities of Cadiz and Isla de Leon; the latter known also as San Fernando, the capital of Spain under the regency 1810, and the scene of the constitutional movement 1820. The old capital has strong fortifications, hospitals, a noted observatory, several convents, and manufactories of soap, leather, salt, and spirits. Pop. (island) estimated 10,000–18,000.

ISLA DE NEGROS, *ēs′ lâ dā nā′ grōs:* island of the Philippine group, Malay Archipelago, Pacific Ocean; separated by narrow channels from Panay on the n.w. and Cebu on the s.e.; extending lat. 9° 3′—10° 58′ n., long. 122° 28′—123° 29′ e.; length 150 m.; average width, 25 m.; area 3,800 sq. m.; pop. estimated 260,000. The inhabitants are chiefly Malay Indians; but there are many Spanish creoles, Chinese, half-Chinese, and E. Indian Mohammedans.

ISLA DE PINOS, *ēs′ lâ dā pē′nōs:* almost circular island of the s. coast of Cuba; 800 sq. m.; largest of the numerous outlying islands of Cuba. It has an excellent climate, exuberant fertility, rich mines, and valuable timber.

ISLAMABAD′. See CHITTAGONG.

ISLAMISM, n. *ĭz′lă-mĭzm* [Ar. *islam,* obedience to the will of God—from *salâmă,* to submit to God; or *islam,* peace, salvation, a righteous man—from *salm,* to be at perfect peace]: the religion or creed of Mohammed. ISLAM, *n. ĭz′lăm,* the religion of Mohammed; the whole body of the faithful, and the countries in which Islamism is professed. ISLAMITE, n. *ĭz′lăm-īt,* a follower of Mohammed. IS′LAMIT′IC, a, *mĭt′ĭk,* pertaining to Islamism.—*Islâm,* or *Eslâm,* may be said to be the proper name of the Mohammedan religion; designating complete and entire submission of body and soul to God, his will and his service, as well as to all those articles of faith, commands, and ordinances revealed to and ordained by Mohammed as the prophet of God (see MOHAMMEDANISM). Islam, it is held, was once the religion of all men; but whether wickedness and idolatry came into the world after the murder of Abel, or at the time of Noah, or only after Amru Ibn Lohai, one of the first and greatest idolaters of Arabia, is in dispute among Moslim (a word derived from *Islam*) theologians. Every child, it is believed, is born in Islam, or the true faith,

and would continue in it till the end were it not for the wickedness of its parents, 'who misguide it early, and lead it astray to Magism (see GUEBRES), Judaism, or Christianity.' See MOHAMMED; KORAN.

ISLAND, n. *īl'ănd* [AS. *igland*—from *eage*, an eye: Fris. *ooge*, an eye, an island: literally, *eye-land*—the true etymology being preserved in *eyot* or *ait*, a small island in a river]: spot of land surrounded by water, having the appearance of the eye in relation to the face; a tract or portion of land surrounded by water. Australia is called sometimes a continent, sometimes an island, the distinction of the terms being vague; even the great e. and w. continents are surrounded with water; thus all land on the globe is *island*. In the ocean between Australia and Asia, and eastward, islands are more numerous than anywhere else in the world. There, also, are the largest islands. Excluding Australia, the largest islands on the globe are Papua, Borneo, and Greenland; after these, Madagascar, Sumatra, and Great Britain. A cluster of several islands is called an archipelago. The principal clusters in the Atlantic are the West Indies, the Azores, the Canaries, the Hebrides, Orkneys, Shetlands, etc. But the great world of islands is in the Pacific, and some modern writers consider them as forming a fifth division of the world, including the Eastern Archipelago, Polynesia, and Australia, to which they have given the name of Oceania. A large island is a continent in miniature, with its chains of mountains, its rivers, lakes, and is often surrounded by a train of islets. The rivers of islands are in general little more than streams or torrents, and the smaller islands are often uninhabitable from want of water; but they serve as haunts and breeding-places of innumerable sea-birds. There are islands in rivers and lakes as well as in the sea. In rivers they are often formed by the division of the stream into various branches, and often by accumulations of earth brought down and deposited around a rocky base. Examples are not wanting of floating islands, which are formed by the roots of plants and trees interlacing with each other, and thus constituting a support for deposits of successive layers of earth. Islands have been grouped into the two distinct classes of continental and pelagic or oceanic islands. Wallace, in his valuable *Island Life* (1880), points out the marked distinctions between *Continental* and *Oceanic* islands respectively. Some islands have the appearance of intimate geological connection with the continents near which they are situated, and some of such connection with each other that they seem as if they were the remaining parts of a former continent; others, generally of more circular form, have their geological character more complete in itself. In the South Seas, there are two very distinct classes of islands, one mountainous, often with active volcanoes; the other low and flat,

formed of coral; see CORAL ISLANDS. Submarine islands, as they have been sometimes called, are immense banks of sand above which there is no great depth of water. ISL'ANDER, n. *ėr*, an inhabitant of an island. ISL'ANDED, a. formed as an island. *Note*—Max Müller asserts that ISLAND ought properly to be spelt ILAND, and that the first part is Goth *ahva*, L. *aqua*, water; hence AS. *eoland*, Icel. *aland*, means water-land: *iland* or *yland* is really the OE. spelling, and possibly the *s* was inserted to form *island* from the analogy of the OF. word *isle*, derived from lat. *insula*.

ISLAND NUMBER 10, a former island in the Mississippi River, near the northwestern corner of Tennessee, and about 40 miles below Columbus, Ky. Since the Civil War it has been washed away. It was the tenth in a succession of islands lying below Cairo, Ill. Early in 1862, having been fortified by the Confederate Gen. Polk, it was commanded by Gen. Mackall, who had about 7,000 troops of Beauregard's army. It was bombarded for three weeks by Commodore Foote, commanding seven Federal gun-boats, and surrendered 1862, April 7. The evacuation was forced by Pope with a large land force. He, under cover of a vigorous fire from two gunboats, which had run past the island by night, brought his men across the river in transports. The defenders of the batteries fled, and were pursued into the swamps. Over 6,000 prisoners were taken, together with an immense quantity of ammunition and supplies. The Federal forces lost only a few men. Consult the Century Company's *Battles and Leaders of the Civil War*, Vol. I.

ISLANDS OF THE BLESSED were according to a very old Greek myth certain happy isles situated towards the edge of the Western Ocean, where the favorites of the gods, rescued from death, dwelt in joy, and possessed everything in abundance that could contribute to it.

ISLAY, *ī'lā:* island on the w. coast of Scotland, belonging to the group of the Inner Hebrides, and to the county of Argyle. It is w. of the peninsula of Kintyre, about 15 m. s. w. of the island of Jura, from which it is separated by a strait called the Sound of Islay: greatest length, 24 m.; greatest breadth, 17 m.; about 220 sq. m. In the n. the island is hilly and along the e. shore runs a ridge 800 to more than 1,500 ft. in height. The central and w. districts are undulating or flat.

ISLE, n. *īl* [OF. *isle*, island—from L. *insŭlă:* It. *isola*, an island]: an island. ISLET, n. *ī'lĕt* [OF. *islette*]: a little island. ISLE OF DOGS, a peninsula jutting into the Thames a few miles below London—in what may be called its isthmus are situated the W. I. Docks. The island is said to have been named as containing the kennels of Edward III.; more probably only a corruption of *Isle of Ducks*, from the fact of numerous wild ducks frequenting its marshes. *Note*—ISLE, though used

in same sense, is quite a different word from *island*, and is not a mere corruption or abbreviation of it.

ISLE LA MOTTE, Vt., in the northern part of Lake Champlain, the northern point about 8 miles from Rouse's Point, N. Y., on the Canadian border; the southern point about 15 miles north of Plattsburg, N. Y. It is about 7 miles long and 2 miles wide. The island has large marble quarries; some of the stone for Victoria Bridge, Montreal, for Fort Montgomery on Lake Champlain, for the Brooklyn Bridge, and for many other structures and buildings came from these quarries. There are on the island two public schools, a Methodist church, town-hall, and a government lighthouse. The island is a favorite summer resort.

ISLE OF FRANCE. See FRANCE, ISLE OF.

ISLE OF MAN. See MAN, ISLE OF.

ISLE OF PINES, a beautiful and salubrious island of the Caribbean Sea, about 40 miles south of the western extremity of Cuba. Nueva Gerona is the capital, situated on the left bank of the Casas river, about two miles above its mouth. A regular line of steamers ply between this place and Batabano, Cuba, 54 miles distant. The other principal towns are Jucaro and Santa Fe, the latter being in the interior. The three towns are united by excellent roads and telephone lines. The general surface of the island is a plateau, from 50 to 100 feet above the surface of the sea; but in the north and central portions there are hills which rise to a height of 1,500 to 1,700 feet, and these hills are covered with pine forests from which the island derives its name. Circling the sea in the southern portion is a flat and marshy region. The soil in the hill country is very fertile, and well adapted to the growth of tobacco and sugar cane, as well as the fruits and vegetables of the tropics, which grow in profusion and of a very fine quality. Products of the temperate zones also flourish in the elevated districts. The principal industries are the raising of horses, cattle, sheep and pigs; and quarrying, lumber manufacturing, charcoal burning, the manufacture of tobacco and cigars, and sea fishing. Marble of various colors and grades, manganese, silicious schist, containing veins of pure brown hematite, building sand and brick clay abound. There are numerous small rivers and streams of excellent water, besides thermal springs valuable in stomach, kidney and rheumatic ailments. During the period of intervention by the U.S., 1899–1902, commodious docks were constructed at Nueva Gerona and Jucaro, and American capital and enterprise have contributed materially to the development of the island. In 1905 an effort was made to have the Isle of Pines adopted as American territory, on the plea that it had not been specified as a dependency of Cuba in the treaty of Paris; but in Nov. of that year the movement was repudiated by Sec. Root in behalf of the U. S. The

population of the island is about 4,000, many of whom are natives of the U. S.

ISLES OF SHOALS, *īlz ov shōlz:* cluster of 8 small and almost barren islands in the Atlantic Ocean, 10 m. s. s. e. of Portsmouth, N. H.; known as Appledore or Hog, Haley's or Smutty Nose, Malaga, Cedar, Gosport or Star, White, Seavey's, and Londoner's. Appledore, Haley's, Malaga, and Cedar belong to York co., Me., and Gosport, White, Seavey's, and Londoner's to Rockingham co., N. H., and constitute the town of Gosport. White Island, the most westerly, contains a powerful revolving light (lat 42° 58′ n., long. 70° 37′ 20″ w.), and on Appledore and Star Islands are large hotels for summer tourists. The group is said to have been discovered by Champlain 1605, and received the name of Smith's Islands from Capt. John Smith who cruised there 1614. Their permanent population is comprised almost wholly of fishermen, and does not exceed 200.

ISLIP, *īs'lĭp;* town in Suffolk co. (Long Island), N. Y.; on Great South Bay and Montauk div. of the Long Island railroad, 44 m. e. of New York. The town embraces several small villages and covers an area 20 m. long by 10 wide. St. Joseph's Convent and the Manhattan State Hospital for the insane are located here; there is also a large fish hatchery owned by the state. Blue point oysters are shipped from here in large quantities. The place is a popular summer resort, and there are a number of fine hotels along the shores of Great South Bay. Fire Island Lighthouse, 166 feet high, is located 8 m. from the mainland. The government is vested in a town supervisor and a town board, elected biennially. Pop. about 4,000.

ISMAIL I., Khedive of Egypt: b. Cairo, 1830, Dec. 31 (reigned 1863–79). d. near Constantinople 1895, Mar. 2; son of Ibrahim Pasha. He was educated in Paris; opposed Abbas Pasha, who succeeded his father 1848, died 1849, and was succeeded by Said Pasha; became commander of the Egyptian army 1862; succeeded to the vice-royalty 1863, Jan. 18; by increasing his tribute and aiding the sultan with his army in the Cretan insurrection 1866, he secured from the sultan the direct succession of his line, and 1867 the titles of highness and khedive; increased his army, assumed jurisdiction over the Upper and White Nile, and sought to establish himself as an independent monarch 1868–9; and was forced to reduce his army, recall orders for iron-clad war vessels, and cease contracting loans in Europe. Subsequently he obtained concessions from the sultan which made him practically independent. He was one of the most zealous promoters of the Suez Canal, became very wealthy by growing cotton during the American civil war, and improved Egypt vastly, but at a cost which the country will be unable to pay for many years. He was deposed by the sultan 1879, June 26.

ISMAILIA, *ĭs-mâ-ē-lē-â:* town in Egypt. See SUEZ CANAL.

ISMAI'LIA, or GONDOKORO, *gŏn-do-kō'rō:* town in Africa. See GONDOKORO.

ISMAILIS, *ĭs-mâ-ē'lĭz,* or ISMAEELIAH, *ĭs-mâ-ē'lē-â,* or ISMAËLIANS, *ĭs-mâ-ē'lē-anz:* very advanced free-thinking Mohammedan sect, of the Shiite branch of Islam (see SHIITES), which sprang up in the 9th c. and spread throughout Mohammedanism. Recognizing Ali alone as the rightful successor of the Prophet, they held Abu Bekr, Omar, Othman, Moawia to be usurpers, and counted their Imams, or representative prophets, from Ali only. The seventh Imam was one Ismaïl, who lived about 150 Hegira (A.D. 772), son of Jafar Assadik, or rather of his son Mohammed. Ismaïl was supposed to be the righteous Prophet, the only orthodox, spiritual head. The notion of the Imam, in general, is that of an ever-living, though at times hidden supreme guide of the people who after a time is restored to humanity, or at least to the believing part of it. A prayer, preserved by Ibn Chaldun, will best show the peculiar notion connected with this belief, to which no small part of Islam confessed. Every evening, a certain number of Imamiehs prayed: 'O Imam, appear unto us. Humanity is awaiting thee; for righteousness and truth have perished, and the world is gone down in darkness and violence. Appear unto us, that we may, through thee, return unto God's mercy.' It was thought, in fact, that Ali himself had reappeared in every Imam, and that he would descend again, some day, 'from the clouds,' to unite all believers, and to restore the pure faith. The real importance of this sect, which had existed unobserved for some time, dates from Abdallah Ibn Maimun, whose father had been put to death for professing materialistic doctrines, and trying to turn people away from the doctrines of Islam. Abdallah seems to have practically carried out his father's notions, but more cautiously. He is described by the Arabic writers as an utterly irreligious and unscrupulous materialist or 'Zendik.' The Messiah, whom he preached, stood higher than Mohammed himself, and though he did not exactly reject the Koran *en bloc,* he yet contrived to allegorize and symbolize away nearly all its narratives and precepts. But the systematic way in which Abdallah went to work, in trying to undermine, and eventually to abrogate, all Islam, and, as his biographers have it, to replace it by materialism, atheism, and immorality, is very remarkable. He established missionary schools; and the instructions given to the young missionaries were artfully designed to win over not merely all the different Mohammedan sects, both Sunnites and Shiites, but also Jews and Christians.

ISMUD' or ISMID, or IZMID. See NICOMEDIA.

ISNIK′, or IZNECK. See NICÆA.

ISOBARIC, a. *ī′sō-bā′rĭk* [Gr. *īsŏs*, equal; *bărŏs*, weight]: applied to lines which connect places on the surface of the earth having the same atmospheric pressure. ISOBARIC LINES: see ISOBAROMETRIC.

ISOBAROMETRIC, a. *ī′sō-băr′ŏ-mĕt′rĭc* [Gr. *īsŏs*, equal, and Eng. *barometric*]: indicating equal barometric pressure. ISOBAROMETRIC LINES, called also ISOBARIC LINES, or ISOBARS, lines connecting on a map the places which exhibit the same mean difference between the monthly extremes of the barometer. These oscillations are greater in some countries, as Hindustan and Newfoundland, than in others, as w. Europe and the Antilles.

ISOBRIOUS, a. *ī-sō′brĭ-ŭs* [Gr. *īsŏs* equal; *brīāō*, I strengthen]: in *bot.*, applied to the dicotyledons, because both cotyledons seem to be developed with equal force.

ISOBUTYL, n. *ī′sō-bū′tĭl* [Gr. *īsŏs* equal; *bouturon* butter; *ulē*, matter]: a compound body found in the volatile oil obtained from horse-radish.

ISOCHEIMAL, or ISOCHIMAL, a. *ī′sō-kī′măl*, or I′SOCHEI′MENAL, *a. -mĕ-năl* [Gr. *īsŏs*, equal; *cheima*, winter]: of the same winter temperature. ISOCHEI′MALS, n. plu. *-măls*, or ISOCHEIMAL LINES, or ISOCHEI′MONAL LINES, imaginary lines passing through places which have the same mean winter temperature. See ISOTHERMAL LINES.

ISOCHOMOUS, a. *ī-sŏk′ŏ-mŭs* [Gr. *īsŏs*, equal, similar; *chōma*, a heap, a mound]: in *bot.*, applied to branches springing from the same plant, and at the same angle.

ISOCHROMATIC, a. *ī′sō-krō-măt′ĭk* [Gr. *īsŏs*, equal; *chrōmă*, color]: having the same color.

ISOCHRONOUS, a. *ī-sŏk′rŏ-nŭs* [Gr. *īsŏs*, equal; *chrŏnŏs*, time]: occurring in equal times, or at intervals of the same duration, as the beats of a pulse. ISOCH′RONISM, n. *-nĭzm*, the property of a pendulum by which it performs its vibrations in equal times, whether these vibrations be long or short; but a pendulum can possess this property only by being constrained to move in a cycloidal arc: see CYCLOID. This is managed by causing the string to wrap and unwrap itself round two equal cycloidal cheeks, the diameter of whose generating circle is equal to half the length of the pendulum. Isochronism is closely approximated in practice by causing the pendulum to describe a very small circular arc. ISOCH′RONON, n. *-nŏn*, clock designed to keep perfectly accurate time.

ISOCLINAL, a. *ī′sō-klī′năl* [Gr. *īsŏs*, equal; *klinein*, to incline]: pertaining to or indicating equality of inclination or dip. ISOCLINAL LINES, imaginary lines on the earth's surface passing through places where the magnetic dip or inclination is the same. See ISODYNAMIC LINES.

ISOCRATES, *ī-sŏk′ra-tēz:* one of the ten Attic orators, and a distinguished Greek writer: B.C. 436–B.C. 338;

b. Athens; son of Theodorus, a citizen of some wealth. He had a weak voice, and much natural timidity, which shut him out from a political career; but he taught rhetoric, oric, and wrote orations for others, for which he received large sums; and though he did not mingle in the strife of parties, he was earnestly interested in the cause of his country's independence and honor. The tradition (somewhat doubtful) is that the fatal battle of Chæroneia broke his heart, and that he refused food, and died after an abstinence of several days in the 98th year of his age. He was a friend of Plato. His school of rhetoric and allied arts, opened at Athens B.C. 392, had great celebrity throughout the ancient literary world. His orations, of which more than 20 are extant, are characterized by extreme carefulness and elegance of style, but are not to be compared with those of Demosthenes in fervor, or with those of Lysias in natural beauty and simplicity. The best modern editions are those of Lange (Halle, 1803), Ad. Coraes (Paris 1807), G. S. Dobson (Lond. 1828), and Baiter and Sauppe (Zürich 1839).

ISOCRYME, n. *ī'sō-krīm* [Gr. *īsŏs*, equal; *krumŏs*, cold]: a line laid down on a map or chart to mark the limits of equal extreme cold on the surface of the earth. I'SOCRY'MAL, a. *krī'măl*, pertaining to or indicating the limits of equal extreme cold.

ISODOMON, n. *ī-sŏd'ō-mŏn* [Gr. *isŏdŏmŏn*, built alike—from *īsŏs, equal; dĕmein*, to build]: a building in which the masonry was cut and squared to the same height, so that the courses of stone, when laid, were all regular and equal.

ISODYNAMIC, a. *ī'sō-dī-năm'ĭk* [Gr. *īsŏs*, equal; *dunămĭs*, force]: having the same power or force; equal in power and capable of producing the same results. ISODYNAMIC, ISOCLINIC, and ISOGONIC LINES; or lines of equal force, equal inclination and equal declination; three systems of lines, which being laid down on maps, represent the magnetism of the globe as exhibited at the earth's surface in three classes of phenomena, the varying intensity of the force, the varying dip or inclination of the needle, and its varying declination from the true meridian: see MAGNETISM.

ISOGEOTHERMAL, a. *ī'sō-jē-ō-thĕr'măl* [Gr. *īsŏs*, equal; *gē*, the earth; *thĕrmē*, heat]: applied to imaginary lines which connect those places on the earth's crust which have the same mean annual temperature—restricted to land.

ISOGONIC, a. *ī'sō-gŏn'ĭk* [Gr. *īsŏs*, equal; *gōnĭa*, an angle]: having equal angles—applied to imaginary lines passing through all places on the earth's surface at which the horizontal magnetic needle makes the same angle with the meridian: see ISODYNAMIC LINES.

ISOHYETOSE, a. *ī'sō-hī'ĕ-tōs* [Gr. *īsŏs*, equal; *hŭĕtŏs*,

rain]: applied to imaginary lines on the earth's surface connecting places which have the same mean annual fall of rain.

I'SOLA BEL'LA. See Borromean Islands.

ISOLA GROSSA, *ē'sō-lâ grōs'sâ*, or Isola Lunga, *ē'sō-lâ lôn'gâ* (Great or Long Island): one of the many islands off the w. coast of Dalmatia, in the Adriatic Sea. It extends between 43° 51′ and 44° 11′ n. lat; greatest length, 27 m.; greatest breadth, 3 m.; pop. 12,000.

I'SOLA MA'DRE. See Borromean Islands.

ISOLATE, v. *ī'sō-lāt* [It. *isolato*, isolated, solitary—from It. *isolare*, to isolate: F. *isoler*, to detach—from L. *insŭlă*, an island—*lit.*, to place in an island]: to place in a detached situation; to insulate; to place by itself. I'SOLATING, imp. I'SOLATED, pp.: Adj. detached; placed by itself or alone; detached. I'SOLA'TION, n. *-lā'shŭn* [F.—L.]: state of being isolated or alone.

ISOMERIC, a. *ī'sō-mĕr'ĭk* [Gr. *īsŏs*, equal; *mĕrŏs*, a part]: formed of the same elements in the same proportions, but having different physical and chemical properties, due to a different arrangement of the ultimate atoms. Isomerism, n. *ī-sŏm'ĕr-ĭzm*, identity in composition, but with difference of properties. Isomerides, isomeric compounds: see Isomerism below. Isom'erous, a. *-ŭs*, in *bot.*, applied to the organs of a flower, when each is composed of an equal number of parts.

ISOMERISM, quality of chemical compounds by which a few inorganic and a large number of organic compounds exhibit different properties, chemical or physical, although identical in percentage composition. In its broadest sense Isomerism may be regarded as embracing (1) polymerism, (2) metamerism, (3) Isomerism in the narrower sense, and (4) geometrical Isomerism.

Bodies are 'polymeric' when they have the same percentage composition, but have different molecular weights. Acetic acid, $C_2H_4O_2$, and grape sugar, $C_6H_{12}O_6$, for example, are polymeric with each other, because they consist of the same elements, combined in the same proportions, and yet the molecular weight of grape sugar is three times as great as that of acetic acid. In this particular case there is no specially close relation between the polymeric substances, and the polymerism is therefore said to be 'accidental.' When a close relation does exist between the bodies compared, the polymerism is said to be 'generic.'

Compounds are said to be 'metameric' when they have the same empirical formula, but differ structurally by containing different radicals, joined by a polyvalent element, such as oxygen, nitrogen or sulphur. Ethyl ether and propyl-methyl ether, for example, both have the empirical formula $C_4H_{10}O$: but ethyl ether contains two ethyl radicals, united by an oxygen atom, and propyl-methyl ether contains a propyl radical and a methyl radical united by oxygen in the same manner.

Isomerism in its narrower sense, or 'true Isomerism' embraces those cases in which the bodies compared have the same empirical formulæ, but have different structural formulæ, and do not (like metameric bodies) consist of definite carbon radicals united by oxygen, sulphur, or nitrogen. True Isomerism may be of two kinds: (1) 'nucleus Isomerism,' and (2) 'Isomerism of position.' The hydrocarbons afford good examples of both kinds of true Isomerism. The paraffin known as propane, for example, has the empirical formula $C_3H_8$, and the structural formula $CH_3—CH_2—CH_3$. Propane may be converted into butane by replacing one of its hydrogen atoms by the methyl radical $CH_3$; but the substitution may be made in two essentially different ways, according as the hydrogen that is replaced is attached to the interior carbon atom, or to one of the terminal ones. In the latter case the structural formula of the new substance is $CH_3—CH_2—CH_2—CH_3$, and the substance itself is known as 'normal' butane. If the hydrogen that is replaced is attached to the interior carbon atom, a different substance known as 'isobutane' and having different properties from normal butane is formed; its structural formula being $CH_3—\underset{\displaystyle CH_3}{\overset{\displaystyle |}{CH}}—CH_3$,

These two substances,—normal butane and isobutane—are said to manifest 'nucleus isomerism,' since they differ by the mode of arrangement of their fundamental carbon chains. In that kind of true Isomerism which is called 'Isomerism of position,' the isomeric bodies contain substituted atoms or radicals, which occupy different positions in the main chain. Thus a paraffin may be converted into an alcohol by substituting a hydroxyl radical (OH) for one of the hydrogen atoms, and the resulting alcohol will have different properties according to the position of the hydrogen atom that was replaced. In this way, for example, four butane alcohols are possible.

Certain compounds are known which possess not only the same empirical formula, but the same structural formula also, and yet manifest distinctly different properties, either chemically or physically. Fumaric and maleic acids (see FUMARIC ACID) are examples of this. In such cases the provisional hypothesis is made, that the geometrical structures of the molecules of the two substances are related to one another in something like the same manner that the image of an object in a mirror is related to the object itself, and the Isomerism is said to be 'geometrical.'

With reference to isomerism in general, consult Hjelt, *Principles of General Organic Chemistry;* Lothar Meyer, *Modern Theories of Chemistry.*

ISOMETRICAL, a. *ī'sō-mĕt'rĭ-kăl* [Gr. *īsŏs,* equal; *mĕtrŏn,* a measure]: pertaining to or characterized by equality of measure.

ISOMETRIC PERSPECTIVE, in Mechanical Drawing: a species of mechanical drawing in which three sides of an object are shown. Most mechanical structures can be referred to an including parallelopipedon. If a point be taken at or near the centre of a sheet of paper and three lines be drawn radiating therefrom, one vertical and downward, and two upward and oblique, making angles of 120° with each other, they may be taken as representing three edges of a parallelopipedon. The object to be drawn is referred to this. Its vertical dimensions are laid off on lines parallel to the front vertical. Its horizontal members on one side are laid off parallel to one of the oblique lines, and the corresponding members on the other side parallel to the other oblique line. Thus three faces of the object are seen. All dimensions parallel to the directing lines are on a true scale. Of the two side faces, the horizontal and vertical dimensions are given on a true scale, the diagonal dimensions being incorrect. It is a kind of false perspective that is easy to draw, and that has the great advantage of permitting the use of a true scale on certain controlling parts.

ISOMORPHISM, n. *ī'sō-mŏr'fĭsm* [Gr. *īsŏs*, equal; *mŏrphē*, form, shape]: the capability shown by two or more simple or compound substances to crystallize in one and the same form, and to replace one another in a compound crystal: such generally possess similar chemical constitution. ISOMOR'PHOUS, a. *-fŭs*, of different chemical constitution, but possessing the same or similar crystalline forms. Isomorphous bodies can form homogeneous mixed crystals; and each one is capable of growing in a saturated solution of the other, fresh crystals being gradually amassed around the original body as a nucleus. Carbonates of calcium, known as calcite; of magnesium, iron, manganese and zinc (magnesite, siderite, rhodochrosite, smithsonite) all are of the same class in crystallography (q. v.). The presence of the same chemical elements of composition in substances does by no means imply Isomorphism and substances of very varying components may yet be isomorphous. The isomorphous elements in isomorphous salts, as, for instance, the metals, are generally of the same or related groups of elements. Dimorphous substances, that is, those which form crystals of more than one kind, are often connected by a third dimorphous substance, such as carbonate of lime in the case of calcite and aragonite, and form a group known as isodimorphous substances.

ISONOMY, n. *ī-sŏn'ō-mĭ* [Gr. *īsŏs*, equal; *nŏmŏs*, law]: equal law or rights. ISONOMIC, a. *ī'sō-nŏm'ĭk*, the same or equal in law or right; one in kind or origin.

ISOPATHY, n. *ī-sŏp'a-thĭ* [prefix, *iso-*; Gr. *pathos*, suffering]: in *med.*, the attempted cure of a disease by the virus of the same malady.

ISOPERIMETRICAL, a. *ī'sō-pĕr'ĭ-mĕt'rĭ-kăl* [Gr. *īsŏs*, equal; *peri*, round; *mĕtrŏn*, a measure]: of equal perimeter or circumference. I'SOPERIM'ETRY, n. *-pĕr-ĭm'ĕ-trĭ*, the science of figures having equal perimeters or boundaries.

ISOPOD, n. *ī'sō-pŏd*, ISOPODA, plu. *ī-sŏp'ō-dă* [Gr. *īsŏs*, equal; *pŏdĕs*, feet]: order of malacostracous crustaceans, having all the legs alike; of the section *Edriophthalma* (q.v.), mostly aquatic—some marine, some inhabitants of fresh waters—but some terrestrial, inhabiting damp places, as the armadillo, woodlouse, etc. The body is flattened. The thorax consists of seven segments bearing seven pair of feet—six in the young before their first moulting. The females have usually large plates attached to the thoracic segments, meeting to form a pouch for the eggs and young.—The interesting fossils called *Trilobites* (q.v.) are supposed to be *Isopoda*, or nearly related to them. ISOPODOUS, a. *ī-sŏp'ō-dŭs*, equal-legged.

ISOPYRE, n. *ī'sō-pīr* [Gr. *īsŏs*, equal; *pur*, fire]: a mineral of a grayish or black color and of vitreous lustre like obsidian; a silicate of lime, iron, and alumina.

ISOSCELES, a. *ĭ-sŏs'sĕ-lēz* [mid. L. *īsŏscĕlēs*, with equal legs—from Gr. *īsŏs*, equal; *skĕlŏs*, a leg]: having equal sides or legs—applied to a triangle having two equal sides.

ISOSPOROUS, a. *ī-sŏs'pō-rŭs* [Gr. *īsŏs*, equal; *spora*, a seed]: in *bot.*, applied to cryptogamic plants which produce a single kind of spore, as ferns.

ISOSTEMONOUS, a. *ī'sŏ-stĕm'ō-nŭs* [Gr. *īsŏs*, equal; *stēmōn*, a thread or stem]: in *bot.*, applied to stamens and floral envelopes which have the same number of parts or multiples.

ISOTHERAL, a. *ī'sŏth'ĕr-ăl* [Gr. *īsŏs*, equal; *thĕrŏs*, summer]: of the same mean summer temperature. ISOTH'ERALS, or ISOTHERAL LINES, system of lines showing the places on the earth's surface where the same mean summer temperature prevails. See ISOTHERMAL LINES.

ISOTHERMAL, a. *ī'sō-thĕr'măl* [Gr. *īsŏs*, equal *thĕrmē*, heat]: having the same temperature; of equal temperature.

ISOTHER'MAL LINES: lines on maps, connecting all places on the surface of the globe that have the same mean temperature. *Isothĕral Lines* (q.v.) connect places of equal mean summer temperature. *Isocheimonal Lines* connect places of equal mean winter temperature. Alexander von Humboldt was the first to lay down these systems of lines on maps, 1817. Their importance in reference to climate, meteorology, and geographic distribution of plants and animals, is very great. If the whole surface of the earth were uniform, it is evident that isothermal lines would precisely correspond with the degrees of latitude, and there would be no isotheral

and isocheimonal lines, as distinguished from the isothermal; but neither would the earth be habitable for man, or suitable for almost any of the animal or vegetable tribes which actually exist upon it. Isothermal, isotheral, and isocheimonal lines are therefore laid down altogether from observations recorded and compared. In laying them down, care must be taken to make allowance for the elevation of each place of observation above the level of the sea, they being all laid down as for that level. Isothermal lines are named according to the mean temperature which they indicate, the line of 50°, the line of 60°, etc. They are far from corresponding with parallels of latitude, nor are they parallel with one another, but are curved in such a manner as to indicate two n. and two s. poles or centres of greatest cold. It is in the extra-tropical parts of the n. hemisphere that these curvatures are the greatest. The n. poles of cold are situated in the arctic regions, one n. of Siberia, nearly in the meridian of Jakutsk; the other n. of America, nearly in the meridian of the most w. part of Hudson's Bay; and the isothermal lines throughout the greater part of the n. hemisphere descend to a lower latitude in e. Asia and in e. America than elsewhere, ascending, however, to a comparatively high latitude on the w. coasts of both the great continents. Thus the line of 50° F., which passes through n. England and n. Ireland, and there reaches its most northern latitude, descends below the latitude of New York on the e. coast of America. The distances of the isothermal lines are also remarkably various in different parts of the world. Thus, in the east of N. America, from Charleston to Labrador, the mean annual temperature varies more than a degree and a half for every degree of latitude; while in central Europe the variation is only about nine-tenths of a degree, and on the w. coasts of Europe still less.

The isotheral and isocheimonal lines are neither parallel among themselves nor with the isothermal lines and it is in this that a chief difference of continental and of insular climates appear, the summers of the former and the winters of the latter having comparatively large proportions of the heat of the year.

Another interesting system of lines relative to temperature has been laid down by Dr. Dove, which he calls *Isabnormal Lines*—the term, however, is objectionable, as formed from words of two languages—lines connecting places which have the same excess above or defect below the normal mean temperature of their latitude. See CLIMATE; METEOROLOGY; TERRESTRIAL TEMPERATURE.

ISOTONIC, a. *ī'sō-tŏn'ĭk* [Gr. *īsŏs*, equal; *tŏnŏs*, tone]: in *music*, having or indicating equal tones.

ISPAHÂN, *ĭs-pa-hân'*, properly ISFAHÂN, *ĭs-fa-hân'*: famous city of Persia, capital of the province of Irak-Ajemi, and formerly cap. of the entire country; on the Zenderud, in an extensive and fertile plain, 226 m. s. of

Tehran: lat. 32° 40′ n. long. 51° 43′ e. The Zenderud is here 600 ft. broad, and is crossed by three noble bridges, one of them 1,000 ft. in length, having 34 arches. Groves, orchards, avenues, and cultivated fields surround the city for miles; but the permanent beauty of the vicinity serves only to make the contrast more striking between the former splendor of the city and its present ruinous condition. Miles of street are now almost tenantless, and many of the palaces are deserted, and rapidly falling to decay. It is believed that less than a twentieth part of the area of the old city is now inhabited. In the *Chahar Bagh*, an extensive pleasure-ground s. of the city, is a palace called the *Chehel Sitton*, or 'Forty Columns,' formerly a favorite royal residence. Along the front of this palace is a double range of columns, each rising from the backs of four lions in white marble. The pillars are inlaid with mirrors, and the walls and roof are profusely decorated with glass and gilding. The suburb Julfa, on the s. bank of the river, formerly a flourishing Armenian settlement of 30,000 inhabitants, is now little better than a mass of ruins. Ispahân, however, is still an important city, and the seat of extensive manufactures, including all sorts of woven fabrics, from rich gold brocades and figured velvets to common calicoes. Trinkets and ornamental goods in great variety, with fire-arms, sword blades, glass, and earthenware, also are manufactured. Many of its bazaars are still crowded daily, and its merchants still have influence enough to affect prices in India. Of late years, too, Ispahân has shown considerable signs of improvement; many of its edifices have been rebuilt; rice, an important article of commerce, is now largely cultivated in the neighborhood. Pop. about 75,000.

Ispahân was a trading town of importance, and the capital of Irak, under the caliphs of Bagdad. It was taken by Timûr 1387, when 70,000 of the inhabitants are said to have been massacred. During the 17th c., under Shah-Abbas the Great, it became the cap. of Persia, and reached the climax of its prosperity. Its walls were then 24 m. in circuit, and it is said to have had between 600,000 and 1,000,000 inhabitants. It was the emporium of the Asiatic world; the merchandise of all nations enriched its bazaars, and ambassadors from Europe and the East crowded its court. In 1722, it was devastated by the Afgans, and some time afterward the seat of government was transferred to Tehran (q.v.).

IS'RAEL (son of Isaac). See JACOB.

IS'RAEL, KINGDOM OF; also IS'RAELITES. See JEWS.

ISRAELITE, n. *ĭz'rā-ĕl-īt:* a descendant of *Israel* or Jacob; a Jew. IS'RAELIT'IC, adj. *-ĭt'ĭk*, or ISRAELIT'ISH, adj. *-īt'ĭsh*, pertaining to Israel or to a Jew.

ISRAELS, JOSEPH, *ez-râ-āls'*, Dutch painter: b. Groningen 1824, June 27. He was a pupil at Amsterdam of

Kruseman and at Paris of Picot, and established his studio first at Amsterdam and later at The Hague. Having essayed historical painting with no marked success, he turned his attention to genre work. He found his subjects among fisherfolk and the humbler classes, whose existence, particularly in its more serious or tragic phases, he depicts in a style likened to that of Millet. Among his canvases are: *Awaiting the Fishing Boats; Alone in the World; Nothing More; The Struggle for Existence; On the Dunes.* He published *Spanien, eine Reiseerzählung* (1900). Consult the study by Liebermann (1901).

ISSUE, n. *ĭsh'shū* [F. *issu*, born, sprung—from *issue*, issue, exit; Norm. F. *issir*, to go out—from L. *exīrĕ*, to go out: It. *uscire*, to go out, to spout]: the act of passing or flowing out; that which happens or turns out; end or ultimate result; children; offspring; a giving or sending out, as of bank notes; giving out or delivering for use; the point in dispute in a suit at law; in *med.*, an artificially produced wound kept raw and open that there may be a constant flow of pus from the surface: V. to send out or forth; to put in circulation; to deliver for use; to flow or come out; to spring, as from a source; to proceed, as progeny; to end or terminate; to arise. Is'SUING, imp.: N. a flowing or passing out; a sending out, as of notes for circulation. Is'SUED, pp. *-shūd:* ADJ. descended. Is'SUELESS, a. *-shū-lĕs*, childless. Is'SUER, n. *-ėr*, one who. ISSUE PEA, in *med.*, a pea or such like for maintaining the irritation in a wound and promote the secretion of pus. AT ISSUE, in dispute; controverted; at variance. TO JOIN ISSUE, in *law*, to come to the point in dispute.—SYN. of 'issue, v.': to proceed; spring; come out; pass out; break out; flow from; send out; send forth; emerge;—of 'issue, n.': exit; egress; passage out; event; consequence; termination; conclusion; sequel; progeny; vent.

ISSUE, in Law: (1) descendants of a common ancestor; or (2) in pleading, a point affirmed by one party in a suit and denied by the other. In the latter sense, an *actual* issue is one formed in an action regularly brought to try a question of right; a *collateral* issue is one formed on a matter only indirectly in the line of the pleading; a *feigned* issue is one formed in a fictitious action, under authority of a court, to try a question of fact before a jury; a *formal* issue is one formed according to the rules required by law; a *general* issue denies the whole declaration in direct terms; an *immaterial* issue is formed on some non-essential matter which will not determine the merits of the cause; an *informal* issue arises when a material allegation is improperly traversed; a *material* issue determines the merits of the cause when decided; a *special* issue is a single point selected by the defendant on which he rests his whole cause; a *common* issue is one formed on the plea of *non est factum* to an action of covenant broken.

IS'TER. See DANUBE.

ISTHMUS, n. *ĭs'mŭs* or *ist-* [L. *isthmus;* Gr. *isthmos;* F. *isthme*]: neck of land uniting two larger portions or uniting a peninsula to the mainland. The name isthmus was by the ancients often employed without any addition to designate the Isthmus of Corinth, joining the Peloponnesus to continental Hellas. Here was a famous temple of Neptune, and here also were celebrated Isthmian games. ISTH'MIAN, a. *-mĭ-ăn,* pertaining to an isthmus. ISTHMIAN GAMES, one of the four great national festivals of anc. Greece, celebrated on the Isthmus of Corinth at first every third year, and afterward every fifth year. They were said to have been instituted by Sisyphus, and restored by Theseus. The games, like those of Olympia, consisted of athletic exercises, with the addition of competitions in music and poetry. The victors were crowned with garlands of fir, and their statues were placed in the temple of Neptune. Till the destruction of Corinth by the Roman general Mummius, B.C. 146, the management of these games was in the hands of the rulers of that city, though the Athenians always had the seats of honor. The Romans added the coarser and more brutal amusements of gladiatorial exhibitions and fights with wild beasts. The spread of Christianity was fatal to their popularity, though they continued during the reigns of Constantine and Julian. See GAME (ANCIENT GAMES—*references*). ISTHMUS CANALS: see INTEROCEANIC CANAL; SUEZ CANAL; PANAMA CANAL.

ISTLE, *ĭs'tl,* or TAMPICO: this structural fibre is produced from several species of small agaves in Mexico, chiefly *Agave heteracantha,* and *A. lechuguilla.* The plants grow wild over a wide area of central and northern Mexico, the centres of the industry being located in the states of Coahuila, Tamaulipas, Nuevo Leon and San Luis Potosi. The fibre is extracted by the peons by hand labor and prepared by rudest methods. The filaments are harsh and stiff, but smooth, and in color a yellowish white, and form an admirable substitute for animal bristles in brush manufacture. Nearly 8,000 tons of the fibre are imported into the United States annually, worth almost half a million dollars. In Mexico the fibre is used for rough cordage and webbing (for saddle girths), and for sacks for the transportation of all kinds of merchandise. A little fibre finds its way into this country to mix with the cheaper cordage fibres, but it cannot amount to very much in the figures of imports. The fibre is derived from the cogolla, or central spike of unopened leaves, these being separated by hand and each leaf scraped on both sides with a kind of dull edged knife, in order to release the fibre, which lies just under the epidermis. After drying, the fibre is sold at the haciendas, put up in bundles of about 75 pounds, and transported on the backs of pack animals to the neighboring towns, where it is sorted, baled, and sent by rail to the port of Tam-

pico for shipment, hence the commercial name, Tampico. For further information see article on Istle Fibre in Mexico, Scientific American Supplement, (1902).

ISTRIA, *ĭs'trĭ-a:* Austrian margraviate, which, with the county of Görz and Gradiska, and the town and territory of Trieste, forms the Austrian crown-land of the coast-districts of Kustenland. It consists of a peninsula projecting into the n.e. corner of the Adriatic Sea, together with the adjacent Quarnero Islands; 1,908 sq. m. The surface is mountainous with off-shoots from the Julian Alps. Two-thirds of the people are of Slavic race, and nearly one-third Italian.—Istria was anciently inhabited by a tribe of Illyrian pirates, and resisted the Roman arms till B.C. 177. After the fall of the Western empire it formed a part of various kingdoms, till Austria acquired it 1797. In 1805 Austria was forced to yield it to France; but re-took it 1813, and has held it since. Pop. about 325,000.

ISVORNIK′. See ZVORNIK.

ĺSWARA, *ēs'wa-ra:* [from the Sanskrit, *is′*, to possess power, hence literally *lord*]: epithet applied to different Hindu divinities, but in mythological acceptation mostly designates SIVA (q.v.).

IT, pron. *ĭt* [AS. *hit;* Dut. *het;* Icel. *hitt;* L. *id*]: the pron. of the 3d pers. sing. neut. nom. or obj.; the thing already spoken of. ITS, *ĭts,* the poss. case of *it.* ITSELF′, the neut. reciprocal pron. *Note.—It* in a sentence stands instead of, and refers to, a place, animal, thing, quality, or clause, but often to nothing definite, as, *it rains; it* refers to a person, in the phrase 'it is I.'

ITACOLUMITE, *ĭt-a-kŏl'ū-mīt:* rock found in Brazil, the Ural Mountains, Ga., N. C., and S. C., and named from the Itacolumi Mountain peaks of Brazil; sometimes called flexible sandstone. It is silicious, granulated, and laminated, generally found with talcose slates, is rendered flexible by the admixture of mica, and is of undoubted sedimentary origin. When discovered in gold regions, diamonds will be found frequently in close proximity.

ITAGAKI, TAISUKE, *tī-sō'kā ē-tâ-gâ'kē,* COUNT, Japanese statesman: b. Tosa province, island of Shikoku, 1838. He received a military education, and in the war of the Restoration (1868) was prominent in the imperial army. From 1871 until his resignation in 1873 he was privy councillor to the emperor. He then became the centre of a movement for constitutional government which in 1877 addressed to the government a memorial asking for a representative assembly and broaching popular rights. Itagaki aimed at a system based on that of Great Britain or the United States, as opposed to the system based on that of Germany, drafted by the Marquis Ito and promulgated in 1890. But he would have been satisfied at first, it is said, with an assembly

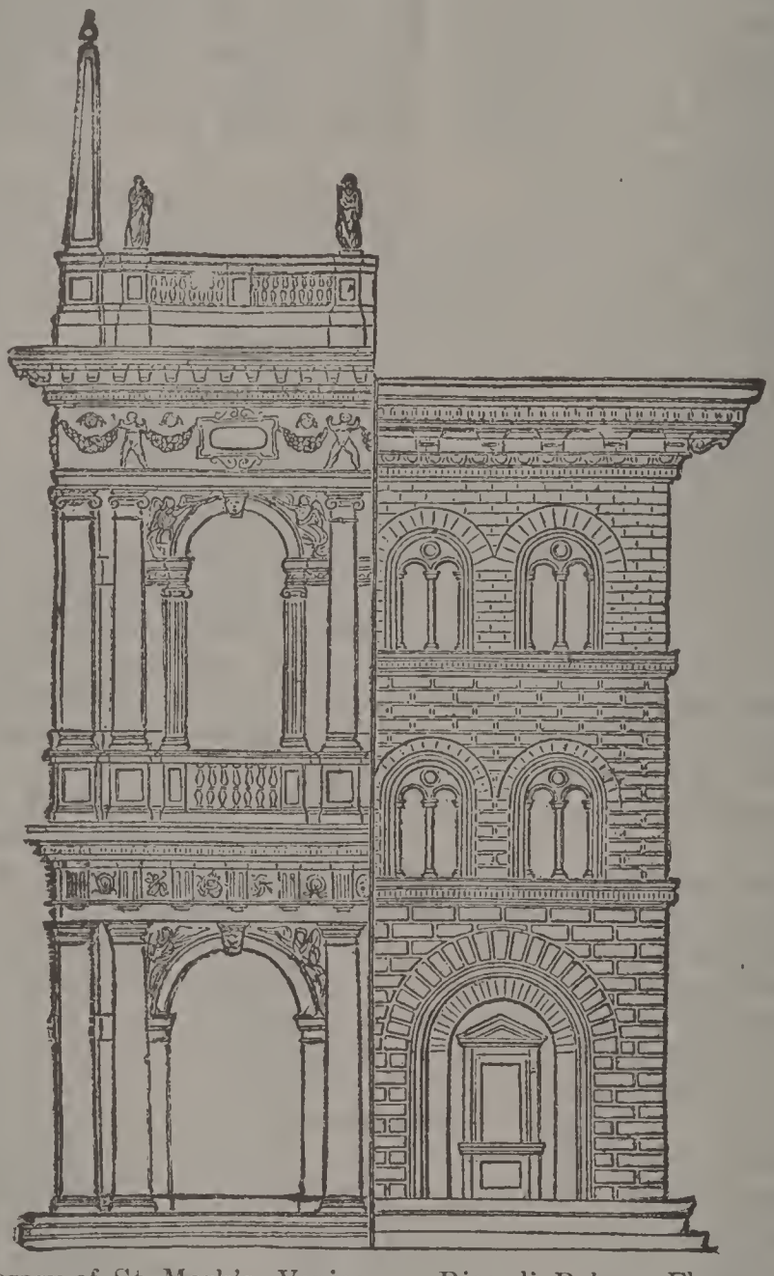
which quite excluded the popular element. He organized the *Jiyuto,* or Liberals, the first Japanese political party, which rapidly increased in numbers. In 1878 he became minister of public works, in 1880 minister of the interior, and in 1898 the Liberals united with the Progressists, led by Count Okuma, to form the so-called Constitutional party, which had a large majority in the lower house of Parliament. At the Mikado's request Itagaki and Okuma formed a cabinet, with Itagaki as minister of the interior. The cabinet resigned after six months, and the Constitutional party was separated into its original parts.

ITAKA-WOOD, n. *ĭt'a-ka wûd* [Guiana name of the tree]: in *bot.* and *com.,* a kind of wood with black or brown streaks much used in cabinet work. It comes from *Machœrium Schomburgkii,* a papilionaceous tree, tribe *Dalbergieæ,* growing in Guiana.

ITALIAN, a. *ĭ-tăl'yăn* [L. *Itălĭă,* Italy]: pertaining to Italy. N. a native of Italy, or its language. ITAL'IANIZE, v. *-yăn-īz,* to make Italian in manners or habits; to speak Italian or play the Italian. ITAL'IANI'ZING, imp. ITAL'IANIZED, pp. *-īzd.* ITALIC, a. *ĭ-tăl'ĭk,* pertaining to Italy or its language; denoting a certain variety of type. ITALICS, n. plu. *ĭ-tăl'ĭks* [F. *italique,* applied to types—from L. *Itălĭcus,* of or belonging to Italy]: a sloping sort of types or letters, invented and used first by the Venetian printer Aldus, 1501. ITALIC VERSION (*Vetus Itala*), a translation or translations of the Scriptures into Latin, which preceded the Vulgate (q.v.); dating probably from the middle of the 2d c., and in use till the time of Jerome. The Old Testament portion was made, not from the Hebrew, but from the Septuagint. The Itala was made for use in Italy, where a higher culture prevailed, which was offended by the Old Latin version (*Vetus Latina*) with its degenerate Latin and its many provincialisms and colloquialisms. ITAL'ICIZE, v. *-ĭ-sīz,* to write or print in italics. ITAL'ICIZING, imp. ITAL'ICIZED, pp. *-sīzd.* ITAL'ICISM, n. *-ĭ-sĭzm,* an Italian phrase or idiom. ITALIAN-IRON, an instrument, when heated, used for fluting and smoothing frills, etc., by laundresses. ITALIAN WAREHOUSEMAN, a vendor of macaroni,, vermicelli, dried fruits, olive-oil, and the like.

ITAL'IAN AR'CHITECTURE: term usually limited to the style practiced by the Italian architects of the 15th, 16th, and 17th c., and which has since been adopted in every country in Europe. This style originated in a revival of the ancient architecture of Rome. Although Gothic architecture had been practiced in Italy during the 13th and 14th c., it had never been thoroughly naturalized. The Italians always showed a preference for the round arch over the pointed northern form; and even in their buildings in the pointed style, there is a certain simplicity and largeness of parts indicative of a classic feeling. As early as 1350, Giovanni Pisano, in

the beautiful sculpture of the pulpit at Pisa, showed a return to the ancient models. Arnolpho di Lapo built the cathedral of Florence (1290–1300), and in his design proposed a great dome (a remarkably Roman feature) over the crossing of the nave and transept. This he did not live to complete; but he prepared the way for



Library of St. Mark's, Venice, by Sansovino.

Ricardi Palace, Florence, by Michelozzo.

Brunelleschi, the chief aim of whose life was the accomplishment of the great dome of the cathedral. He went to Rome to study the ancient buildings there, at that time neglected and hardly known to the Italians themselves. After giving considerable time to these monuments, he returned to Florence, and, after great opposition, succeeded in carrying out the construction of the dome as it now stands. From this time the re-

vival of Roman architecture went on rapidly. It was encouraged by the popes and other princes of Italy; and the invention of the printing-press soon spread a knowledge of the works of the Italian architects over Europe. At first, the Roman moldings and ornaments were copied and applied to the existing forms. As the ancient style became better understood, its general principles were gradually adopted, until at length the Modern Italian style was formed. This style may be defined as ancient Roman architecture applied to the forms and requirements of modern buildings. It has been admirably applied to domestic, but it has never been so successfully used in ecclesiastical edifices. The domes of the Italian churches render the interiors of these buildings very impressive, and are a feature for whose introduction into w. Europe, we are indebted to this style; but the façades of the churches are broken up into stories, and lack the unity of a Gothic front.

Italian architecture is divided into three styles or schools according to the places where it was practiced—viz., the Florentine, Roman, and Venetian. The Florentine buildings are massive and grand in effect; they are indebted to ancient Roman art for details chiefly, the outlines being the same as those of the older buildings, formed to suit the requirements of the place. Florence being a turbulent city, every man who had anything to lose had literally to make his house his castle. Accordingly, the basement floor is massively built with large blocks of stone, and the windows are small and plain. The Roman school naturally resembles more closely the ancient Roman buildings so numerous in that city—pilasters, arcades, etc., being freely used. In Rome, the plan of including two or more stories in one *order* of columns or pilasters with their entablature, with an attic or low story above, originated, and was afterward extensively, but, as already explained, not with entire success, applied to churches.

The Venetian style is, as might be expected in a city long accustomed to elegant palaces, the most ornate and picturesque of the Italian schools. Venice is crowded with specimens of all kinds from the earliest to the latest renaissance, and retains its individuality of style from first to last. Each story is marked by a separate tier of columns or pilasters with their entablature; the windows are arched and ornamented with columns, and the spandrils commonly filled with figures. The outline is varied in form, and is usually finished with a balustrade, broken by pedestals, and crowned with sculptured figures. It is from this most picturesque of the styles of the Italian renaissance that the other countries of Europe derived their peculiar forms. See RENAISSANCE; ELIZABETHAN; CINQUE-CENTO; PALLADIO.

ITAL'IAN LAN'GUAGE AND LITERATURE. See ITALY.

## ITALIAN MUSIC.

ITALIAN MUSIC. In Italy the imperfect forms of ancient music were first lost in the modern. Here we first find the proper choral song, the foundation of modern church music, which was at first sung in unison, chiefly in melodies derived from the old Græco-Roman music, and adapted to Christian hymns and psalms. (See MUSIC.) It seems to have had its origin when Bishop Ambrosius, in the 4th century, introduced into the Western Church songs and hymns adapted to the four authentic modes of the Greeks, and appointed psalmists or precentors. Gregory the Great, in the 6th century, enlarged the choral song by the plagal modes. From this time singing-schools were multiplied, and much was written upon music. The most important inventions for the improvement of music generally we owe to the 11th century, and particularly to the Benedictine Guido of Arezzo, who, if he did not invent the mode of writing musical notes and the use of the clef, improved and developed them, determined the exact relations of the tones, named six of the tones of the scale, and divided the scale into hexacords. In the 13th century the invention of music in measure was spread in Italy, dependent upon which was that of counterpoint and figured music. Instruments were multiplied and improved in the 14th and 15th centuries. Many popes favored music, particularly vocal, and consecrated it by their briefs; yet the ecclesiastical ordinances restrained the independent development of music. Much instruction was given in singing in the 15th century, and not entirely by monks. Music acquired the rank of a science, and vocal music in counterpoint was developed. In the 16th century we discover distinguished composers and musicians—Palestrina (chapel-master to Pope Julius III.), whose works possess great dignity and scientific modulation; his successor, Felice Anerio; the celebrated contrapuntist and singer, Gregorio Allegri; and the writer upon harmony, Giuseppe Zarlino, chapel-master at Venice. Music was cultivated at Rome and Venice with the greatest zeal. Hence it spread to Naples and Genoa. About the end of the 16th century we first meet with the opera. The first operatic composer was Jacopo Peri. The taste for this new kind of composition spread so quickly that composers were soon unable to supply the demands of the people, and from 40 to 50 new operas appeared yearly in Italy. In the middle of the 17th century, when the music of the theatre was continually advancing, simplicity began to give place to pomp and luxuriance, and the church style to decline. Among the best composers of the 17th century are Girolamo Frescobaldi, Francesco Foggia, Bapt. Lully, and the celebrated violinist and composer Arcangelo Corelii. To the singers, of whom the most were also composers, belong Antimo Liberati, Matteo Simonelli, both singers in the chapel of the Pope. In

the beginning of the 18th century Ant. Caldara was distinguished. He increased the effect of the singing by the addition of instruments, but his style partook much of the theatrical. In the middle of this century Italian music, especially theatrical, flourished, particularly at Naples, Lisbon, and also in Berlin. This has been declared by some the most brilliant period of Italian music. There were some distinguished instrumentalists in Italy, as the organists Scarlatti and Martinelli, the violinist Tartini, Domenico Ferrari, Gemmiani, Ant. Lolli, Nardini, and Clementi. Among the composers of the 18th century may be mentioned Traelta, who, through his refinements, injured the simplicity of composition; Galuppi, distinguished by simple and pleasing song, rich invention, and good harmony; Niccolo Jomelli, who gave greater importance to instrumental music; Nic. Porpora, distinguished for his *solfeggios* in church music; Pergolesi, whose music is always delightful from its simple beauty (for example, his Stabat Mater); Pater Martini, at Bologna; the sweet Piccini, rival of Gluck; the agreeable Sacchini Sarti. Of a later date are Paesiello, Cimarosa, the ornament of the *opera buffa*, and Zingarelli (Romeo and Juliet), Nasolini, Paganini, Niccolini, Cherubini, Rossini, Bellini, Donizetti, Verdi (d. 1901, Jan. 27), Mascagni, and Perosi.

ITALIAN PAINTING. The 12th century is generally taken as the period of the beginning of the history of painting in Italy, but before that time it had been the scene of the labors of Greek and Byzantine artists. During the pontificate of Leo the Great (440–461) a large picture in mosaic was executed in the Basilica of St. Paul, on the road to Ostia, and the portraits of the first 42 bishops, which are seen in the same church, date their origin from the same time. Mosaic and encaustic painting was then the prevalent mode. Painting in distemper was afterward introduced. In the 8th century painting on glass, mosaic on a ground of gold, and painting in enamel, were zealously prosecuted in Italy. There were already many native artists. One of the oldest monuments of art is the celebrated Christ on the Cross, in the Trinity church at Florence, which existed there as early as 1003. About 1200 a Greek artist, Theophanes, founded a school of painting in Venice. The art was first pursued with zeal in Pisa. The only artist of eminence who preceded Cimabue, who was born at Florence in 1240, was Guido of Siena, whose most celebrated work is a madonna, executed in 1221 for the church of San Domenico in his native place, where it is still to be seen. Cimabue, who was regarded as a prodigy by his contemporaries, first introduced more correct proportions, and gave his figures more life and expression. His scholar Giotto (died 1336) excelled him even in these respects, and

exhibited a grace hitherto unknown. He was the friend of Dante and Petrarch, and practiced with equal success historical painting, mosaic, sculpture, architecture, and portrait and miniature painting. He first attempted foreshortening and a natural disposition of drapery, but his style nevertheless remained dry and stiff. He was followed by Gaddi, Stefano, Maso, and Simone Martini (Memmi). But Masaccio (properly Tommaso Guidi, born 1402) first dispelled the darkness of the Middle Ages, and a brighter dawn illuminated the art. The Florentine Republic in the beginning of the 15th century had attained the summit of its splendor. Cosmo de' Medici patronized all the arts and sciences; Brunelleschi then built the dome of the cathedral; Lorenzo Ghiberti cast the famous doors of the baptistery in bronze; and Donatello was to statuary what Masaccio was to painting. Paolo Uccelli laid the foundation for the study of perspective. Luca Signorelli, who first studied anatomy, and Domenico Ghirlandaio, who combined noble forms and expression with a knowledge of perspective, and abolished the excessive use of gilding, were distinguished in their profession. Leonardo da Vinci (1452–1519), who was a master in all the arts and sciences, infused so much philosophy and feeling into the art that, by his instrumentality, it quickly reached maturity. From him the Florentine school acquired that grave, contemplative, and almost melancholy character to which it originally leaned, and which it afterward united with the boldness and gigantic energy of Michelangelo. The Roman school already enumerated among its founders the miniature painter Oderigi, who died in 1300. Guido Palmerucci, Pietro Cavallini, and Gentile da Fabriano were his most distinguished successors. Perugia was the principal seat of the Roman school. As early as the 13th century there was a society of painters there. Pietro Vanucci, called 'Perugino' (1446-1524), first introduced more grace and nobler forms into this school. Perugino's great scholar Raphael soon surpassed all former masters, and banished their poverty, stiffness, and dryness of style. Taste came into Venice from the East. Andrea Murano and Vittore Carpaccio are among the earliest artists of that city. Giovanni and Gentile Bellino are the most distinguished painters of the earlier Venetian school. Andrea Mantegna (died 1506) was the first to study the ancient models. Padua was the principal seat of the Venetian school. Mantegna afterward transferred it to Mantua, and his style formed the transition to the Lombard school. Schools of painting flourished in Verona, Bassano, and Brescia. Giovanni da Udine (who was so distinguished by his faithful imitation of nature in secondary things that he painted for Raphael the garlands around his pictures in the Fernesina), Pellegrino, and Pordenone were the most able pred-

ecessors of the two great masters of the Venetian school, Giorgione and Titian. No capital city served as the central point of the Lombard school. Bologna subsequently became the centre. Imola, Conto, Ferrara, Modena, Reggio, Parma, Mantua, and Milan were afterward considered the seats of this school. Galasio (who lived about 1220), Alighieri, Alghisi, Cosimo Tura, Ercole Grandi, and especially Dosso Dossi (died 1560), were the principal painters of Ferrara. Bramante (died 1514), who was likewise a great architect; Lippo Dalmasi; and especially Francesco Raibolini (died 1517), called 'Francesco Francia,' were highly distinguished among the Bolognese masters. Here also belongs the charming Innocenzo da Imola.

We now come to the greatest masters of any age, called 'Cinquecentisti,' from the century in which they flourished. After Leonardo da Vinci, in the Florentine school, had settled the proportions of figures, and the rules of perspective and of light and shade, and his scholars, Luini, Salaino, and Melzo, besides the admirable Baccio della Porta ('Fra Bartolommeo,' d. 1517), Andrea del Sarto (d. 1530), the gifted Baldassare Peruzzi and the gay Razzi had made this school distinguished, there arose the most extraordinary of all masters, Michelangelo Buonarotti (1474-1564). His gigantic mind grasped, with equal power, statuary, architecture, and painting. His fire of composition, his knowledge of anatomy, the boldness of his attitudes and foreshortenings, leave him without a rival; but, as a model, he was detrimental to the art, because his imitators necessarily fell into exaggeration and contempt of a simple style. In grandeur his fresco painting, the *Last Judgment*, in the Sistine chapel at Rome, is inimitable. Beauty was never so much his object as power and sublimity, especially since, in the former, he could never equal Raphael, but in the latter stood alone. Rosso de' Rossi, Daniele da Volterra, Salviati, Angelo Bronzino, Alessandro Allori, and many others were his scholars and imitators. If we turn our attention to the Roman school we find at its head the first of artists, Raphael Sanzio da Urbino (1483-1520). His genius showed itself as elevated in his fresco paintings, in the *stanze* and *loggie* of the Vatican (the former of which contain the *School of Athens*, the *Parnassus*, and the *Conflagration of the Borgo*, while the latter contain Scriptural scenes from the creation through the whole Old Testament), as it appears lovely, spiritual, and original in the frescoes of the Farnesina (representing the life of Psyche). No less superior are his oil paintings, of which we shall only mention his madonnas, celebrated throughout the world, especially the *Madonna del Sisto* (in the Dresden gallery), the *Madonna della Sedia* (in Florence), *Madonna della Pesce* (in Madrid), *Maria Giardiniera* (in Paris), *Madonna di Foligno*

(in Rome), his *St. Cecilia* (in Bologna), and his last work, the *Transfiguration of Christ*. His scholars and successors—the bold Giulio Romano (d. 1546), the more gloomy Gianfrancesco Penni, called 'il Fattore' (d. 1528), the lofty Bartolommeo Ramenghi, surnamed 'Bagnacavallo,' Pierino del Vaga (properly Buonaccorsi), Polidoro da Caravaggio, Gemigniani, Benvenuto Tisio da Garofalo, and many others—were skilful masters; but they forsook the path of their great pattern, and degenerated into mannerism. Federico Baroccio (d. 1612) endeavored to counteract this tendency. In spirit he belonged to the Lombard school, as he aimed at, and in part attained, the grace of Correggio. With his scholars Francesco Vanni and the brothers Zucchero he infused a new life into the Roman school. Muziano was distinguished in landscape-painting, and Nogari and Facchetti in portrait-painting. At the head of the Venetian school we find two excellent colorists Giorgione Barbarelli di Castelfranco (d. 1511) and Tiziano Vecelli (d. 1576). The portraits of the former are celebrated for their warmth and truth. The latter was great in all the departments of art. Some of his most famous works are the altar-piece of St. Pietro Martire, his pictures of *Venus*, his *Bacchanal* and his *Children Playing*, in Madrid, his *Cristo della Moneta*, etc. His successors—Sebastiano del Piombo, Palma Vecchio, Lorenzo Lotto, Paris Bordone, Pordenone—are distinguished especially in coloring. Schiavone, Giacomo da Ponto, called 'Bassano,' Robusti, called 'Il Tintoretto' (d. 1594), and Paul Veronese, properly Paolo Cagliari (d. 1588), were ornaments of the Venetian school. At the head of the Lombard school we find the charming Antonio Allegri da Correggio (d. 1534). His successors and scholars were Francesco Rondani, Gatti, Lelio Orsi, and especially Francesco Mazzola called 'Il Parmegianino' (d. 1540). Gaudenzio Ferrari and many others are the ornaments of the Milanese school. In Bologna we find Bagnacavallo (d. 1542), Francesco Primaticcio (d. 1570), Niccolò dell' Abbate, Pellegrino Tibaldi, Passarotti, and Fontana.

They were followed by the three Carracci, who endeavored to restore a pure style, and, by the combined study of the ancient masters of nature and science, to give a new splendor to the degraded art. Their influence was powerful, and Italian art became divided between the followers of the Carracci, who were called eclectics, and the followers of Michelangelo da Caravaggio, called naturalists. Lodovico Carracci (1555-1619) was, according to some accounts, the uncle, according to others the cousin of the two brothers Agostino (1558-1601) and Annibale (1560-1609). In 1589 all three united in establishing at Bologna an academy for painting, which was called accademia degli incamminati, and soon became so famous that all other schools for

painting in the city were closed for want of attendance. The scholars of Carracci are numberless. The most famous endeavored to unite the grace of Correggio with the grandeur of the Roman masters. Cesare Aretusi was distinguished for the most faithful copies of Correggio and Guido Reni (d. 1642), especially for the ideal beauty of his heads, the loveliness of his infant figures and the uncommon facility of his pencil. The Bolognese Francesco Albani (d. 1660) lived in constant rivalry with Guido. He produced many large church paintings. His paintings in the Verospi gallery, and his *Four Elements*, which he painted for the Borghese family, gained him universal reputation. The third great contemporary of those already mentioned, Domenico Zampieri, called 'Domenichino' (d. 1641), was at first little esteemed by them, on account of his great modesty and timidity. Thrice were prizes awarded by Lodovico to drawings, the author of which no one could discover. At last Agostino made inquiries, and the young Domenichino timidly confessed that the drawings were his. His *Communion of St. Jerome*, his *Martyrdom of St. Agnes*, and his fresco in the Grotta Ferrata are immortal masterpieces. Giovanni Lanfranco (d. 1647) was especially distinguished for the effect of his light. Bartol. Schidone is one of the best colorists of this school. The Bibienas, the Molas, Al. Tierini, Pietro da Cortona, Ciro Ferri, also deserve mention. At the head of the naturalists stands Michelangelo Merighi, or Amerighi da Caravaggio (d. 1609). The chief of those who in a later age took him as a model was Salvator Rosa (d. 1673), to whose name may be added those of Preti 'il Calabrese' and Giuseppe Crespi, called 'Spagnuolo.' His chief opponent in Rome was D'Arpino, who stood at the head of the idealists, or rather of the mannerists. Caravaggio and his successors, Manfredi, Leonello Spada, Guercino da Cento, etc., often took common nature for a model, which they servilely imitated, thus profaning the genuine dignity of the art, though they cannot be denied strength and genius. About this time, the beginning of the 17th century, the *bambocciate* were introduced. Many artists especially Michelangelo Crequozzi, surnamed 'delle battaglie' and 'delle bambocciate,' followed this degenerate taste. Andrea Sacchi made great efforts to oppose him. His drawing was correct and grand; Raphael was his model.

Italian art, already in the 17th century very far sunk below the purity of style and the nobility of composition which distinguished it in the time of Raphael, during the 18th century fell into a complete decay. Three or four names of this epoch, those of the Neapolitan Solimena, the Venetians Tiepolo and Canaletto, and the Lucchese Pompeo Battoni, alone deserve to be saved from oblivion. During the first half of the 19th century the artists of Italy still confined themselves to dull

imitations of the ancient masters and to academical commonplaces. The Milanese Andrea Appiani is the only one that need be separately distinguished among the crowd. The other more tolerable painters of this period are Francesco Hayez, Vincenzo Camuccini, Pietro Benvenuti, and Giuseppe Bezzuoli. At the present day an improvement is discernible in the position of Italian art, and serious efforts are being made to rise above the standard of academic conventionality. Among the chief artists are Ussi of Florence, Andrea Gastaldi of Turin, Federigo Faruffini of Sesto, Domenico Morelli, Francesco Castiglione, Camillo Miola, and others belonging to Naples, Pompeo Molmenti of Venice, etc.

ITALIAN SCULPTURE. Although Italy has possessed some eminent sculptors, this branch of art (apart from some great works of Michelangelo) never attained so high a position in that country as painting. To Niccolò da Pisa in the 13th century belongs the honor of having first broken loose from the barbarous manner of the early carvers in stone, and to have taken as models the masterpieces of ancient art. His numerous works (among others the pulpit in the baptistery of Pisa and the tomb of Saint Dominic at Bologna) clearly reveal the new source of inspiration. Niccolò had a worthy successor in his son (according to other accounts brother), Giovanni da Pisa, who in his turn trained up a school of sculptors in the true principles of the art. The most famous of these are the brothers Agnolo and Agnostino da Siena and Andrea da Pisa. The influence of Giovanni da Pisa may also be traced in the magnificent works of Masuccio, Pietro, Stefanoni, and others, all of whom were distinguished in architecture as well as in sculpture, for it must not be forgotten that at that time and even as late as the 15th century, sculpture and even painting were rather regarded as handmaids of architecture, than as separate arts regulated by laws of their own. Hence it was necessary for the architect to possess a thorough knowledge of all the three arts, and thus we find that several masters such as Giotto, Andrea, Orcagna, Leonardo da Vinci, Michelangelo, and Raphael were at once architects, painters, and sculptors, that others were architects and painters, and still more architects and sculptors. During the 15th century the sculptors of Florence, then the metropolis of the arts, excelled all their rivals, as much as her painters and architects did theirs. At their head stand Lorenzo Ghiberti (d. 1455), and Donatello (d. 1466). Among the other great artists of the period were Filippo Brunelleschi, Giacomo della Quercia, and Niccolò d'Arezzo, all of whom besides Donatello were competitors with Ghiberti in the case of the famous bronze doors of the baptistery of the church of San Giovanni at Florence. Giacomo della Quercia afterwards rendered himself celebrated by executing the cen-

tral door of the cathedral of Bologna. Brunelleschi was so much devoted to architecture that he has left behind him but a small number of sculptures. Luca della Robbia was also eminent among the masters of that time, but his works are chiefly in enameled earthenware, the secret of making which he discovered. The best pupils of Donatello were Desiderio da Settignano (d. 1485), and Andrea Verrochio, a jeweler, sculptor, engraver, painter, and musician, celebrated as the sculptor of one of the most admirable equestrian statues in bronze anywhere to be seen, that of Colleone at Venice, and no less so as the teacher of Leonardo da Vinci and Michelangelo. The other chief sculptors of the 15th century are Matteo Civitali, Bendetto da Rovezzano, and Lorenzo di Pietro (called 'Il Vecchietta'), the last also celebrated as a painter and an architect. In Michelangelo the Italian renaissance in statuary reached its highest point. That great artist gave to the human form a character of force and majesty, and in action a fulness and vehemence which he did not always keep within the limits of reality, but which constitute the sublime and truly original aspect of his works. His great misfortune was to be followed by a crowd of imitators, who exaggerated the majesty of his style to a ridiculous extreme. The two most illustrious of his pupils were Montorsoli and Baccio da Montelupo. Sansovino (d. 1570) was able to preserve himself from a servile imitation, and became the founder of a school at Venice, from which proceeded Cattaneo, Pietro da Salo, Jacopo Colonna, and others. Besides these the 16th century numbers among its celebrated masters of the chisel Benvenuto Cellini, more famous as a designer in metal than a sculptor in marble, Tribolo, Vincenzio Danti, Giovanni Merliano da Nola, called the Michelangelo of Naples, etc. With Bernini in the 17th century statuary underwent a complete decline similar to that which befell the other arts as well as literature during the same period, from which condition it did not rise again till about the end of the 18th and the beginning of the 19th century, when a renewed lustre was shed on the Italian school of sculpture by Antonio Canova (d. 1822), who acquired an immense reputation, partly justified by the grace of his figures and the delicacy of the execution. After him Lorenzo Bartolini (d. 1850) acquired distinction by the excellence of his works. The chief defects of this artist and of the Italian sculptors of the present age generally is the want of originality of conception and breadth of execution.

ITALY, *ĭt'a-lĭ:* kingdom in southern Europe, comprising the whole of the great Mediterranean peninsula extending s. from the Alps (excepting the small republic of San Marino, q. v.), together with Sicily, Sardinia, and some smaller islands. The length of this peninsula is 710 m.; extreme breadth 351 m., minimum 20 m.,

average 90–100 m. It is bounded on the north by the Alps, which separate it from Austria and Switzerland, except at the district lying to the north of Lake Garda, where its frontier does not follow the line of the Alps; on the west by France, from which it is separated along the larger part of the frontier line by the Graian, Cottian, and part of the Maritime Alps, and by the Mediterranean; on the south by the Gulf of Taranto and the Mediterranean; and on the east by the Adriatic and a portion of the Austro-Hungarian Empire. It is comprised between lat. 36° 40′ and 46° 40′ N. and between lon. 6° 35′ and 18° 35′ E.

*Political Divisions.*—For administrative purposes Italy is divided into 69 provinces, which are grouped under 16 departments (*compartimenti territoriali*), some of which consist of only a single province. The provinces are subdivided into circles (in Venetia and the province of Mantua called districts). The following table furnishes a list of the provinces and departments, with the area of each, and the population:

| Provinces and Compartimenti. | Area in Sq. Miles. | Population, 1901. |
|---|---|---|
| 1. Alessandria | 1,950 | 811,833 |
| 2. Cuneo | 2,282 | 638,235 |
| 3. Novara | 2,553 | 743,115 |
| 4. Turin | 3,955 | 1,124,218 |
| Piedmont | 11,340 | 3,317,401 |
| 5. Genoa | 1,582 | 934,627 |
| 6. Porto Maurizio | 455 | 142,846 |
| Liguria | 2,037 | 1,077,473 |
| 7. Bergamo | 1,098 | 459,594 |
| 8. Brescia | 1,845 | 538,427 |
| 9. Como | 1,091 | 580,214 |
| 10. Cremona | 695 | 327,838 |
| 11. Mantua | 912 | 311,942 |
| 12. Milan | 1,223 | 1,442,179 |
| 13. Pavia | 1,290 | 496,969 |
| 14. Sondrio | 1,232 | 125,565 |
| Lombardy | 9,386 | 4,282,728 |
| 15. Belluno | 1,293 | 192,800 |
| 16. Padua | 823 | 443,227 |
| 17. Rovigo | 685 | 221,904 |
| 18. Treviso | 960 | 412,267 |
| 19. Udine | 2,541 | 592,592 |
| 20. Venice | 934 | 401,241 |
| 21. Verona | 1,168 | 422,427 |
| 22. Vicenza | 1,052 | 447,999 |
| Venice | 9,476 | 3,134,467 |
| 23. Bologna | 1,448 | 527,367 |
| 24. Ferrara | 1,012 | 271,776 |
| 25. Forli | 725 | 280,823 |
| 26. Modena | 987 | 315,804 |
| 27. Parma | 1,250 | 294,159 |
| 28. Piacenza | 954 | 245,126 |
| 29. Ravenna | 715 | 235,485 |
| 30. Reggio Emilia | 876 | 274,495 |
| Emilia | 7,967 | 2,445,035 |

ITALY
SCALE OF MILES
0 25 50 75 100 125 150
SWITZERLAND
AUSTRIA-HUNGARY
LIGURIAN SEA
TYRRHENIAN SEA
ADRIATIC SEA
IONIAN SEA
MEDITERRANEAN SEA
SARDINIA
CORSICA
(To France)
SICILY
Milan
Turin
Genoa
Nice
Florence
ROME
Naples
Venice
Trieste
Bologna
Palermo
Messina
Catania
Taranto
Brindisi
Bari
Ancona
Pescara
Foggia
Reggio
Cagliari
Sassari
Porto Torres
Alghero
Oristano
Sorgono
Nuoro
Ozieri
Tempio
Terranova
Ajaccio
Bastia
Calvi
Corte
Porto Vecchio
Bonifacio
Strait of Bonifacio
Elba I.
Pontine Is.
Ischia I.
Capri I.
Aegades Is.
Ustica
Lipari Is.
Stromboli (Vol.)
Pantelleria I.
Galita I.
Linosa I.
Lampione I.
Lampedusa I.
Pelagie Is.
Maltese Is. (British)
Malta
Valetta
Gozo
Castello
Tunis
Bona
Biserta
Goletta
C. Bon
Sukarras
Kairwan
Susa
Sfax
Mohares
Africa
Gulf of Genoa
Gulf of Spezia
Gulf of Venice
Gulf of Gaeta
Gulf of Salerno
Gulf of Taranto
Gulf of Policastro
Gulf of Squillace
Gulf of Castellamare
Gulf of Cagliari
Str. of Messina
Mt. Etna
Mts. Calabrian
Dalmatia
Herzegovina
Bosnia
Monaco
San Marino
Pola
Fiume
Zara
Sebenico
Spalato
Knin
Banjaluka
Karlstadt
Gratz
Goritz
Udine
Venice
Ravenna
Rimini
Pesaro
Fano
Urbino
Macerata
Fermo
Ascoli
Teramo
Chieti
Vasto
Termoli
Foggia
Barletta
Bisceglie
Molfetta
Monopoli
Fasano
Brindisi
Martina
Francavilla
Lecce
Gallipoli
Otranto
Taranto
Metaponta
Policastro
Belvedere
Cotrone
Catanzaro
Nocera
Pizzo
Tropea
Castelvetere
Siderno
Reggio
Messina
Milazzo
Barcellona
Cefalu
Palermo
Trapani
Marsala
Mazzara
Sciacca
Girgenti
Licata
Terranova
Comiso
Scicli
Noto
Avola
Syracuse
Augusta
Catania
Caltagirone
Caltanisetta
Gangi
Acireale
Bronte
Mistretta
Termini
Corleone
Partanna
Aragona
Canicatti
Vizzini
Ragusa
C. Portio di Palo
C. Spartivento
C. Teulada
C. Carbonara
G. di Palmas
Ajaccio
Porto Torres
Porto d'Anzio
Civita Vecchia
Porto S. Stefano
Piombino
Leghorn
Pisa
Lucca
Massa
Carrara
Spezia
Sanremo
Monaco
Cuneo
Turin
Milan
Como
Lecco
Bergamo
Brescia
Verona
Mantua
Cremona
Parma
Modena
Reggio
Ferrara
Padua
Vicenza
Treviso
Belluno
Trient
Bolzano
Innsbruck
Chur
Bern
Lienz
Gratz
R. Po
R. Adige
R. Drave
R. Save
R. Narenta
R. Verbas
R. Bosna
Istria
Veglia
Cherso
Lussin
Grossa I.
Arbe
Pago
Lissa
Lesina
Curzola
Lagosta
Meleda
Brazza
Ragusa
Cattaro
Scutari
Durazzo
Valona
Otranto
Strait of Otranto
Gulf of Valona
Gulf of Durazzo
Gulf of Cattaro
Gulf of Fiume
Gulf of Quarnero
Gulf of Trieste
Gulf of Venice
Gulf of Genoa
Gulf of Spezia
Gulf of Gaeta
Gulf of Salerno
Gulf of Taranto
Gulf of Policastro
Gulf of Squillace
Gulf of Castellamare
Gulf of Cagliari
Gulf of Palmas
Gulf of Sidra
Gulf of Gabes
Gulf of Tunis
Gulf of Bona
Gulf of Biserta
Gulf of Kairwan
Gulf of Sfax
Gulf of Mohares
Gulf of Africa

## ITALY.

| Provinces and Compartimenti. | Area in Sq. Miles. | Population, 1901. |
|---|---|---|
| 31. Arezzo | 1,273 | 271,676 |
| 32. Florence | 2,265 | 939,054 |
| 33. Grosseto | 1,738 | 144,722 |
| 34. Leghorn | 133 | 123,877 |
| 35. Lucca | 558 | 319,523 |
| 36. Massa and Carrara | 687 | 195,631 |
| 37. Pisa | 1,179 | 320,829 |
| 38. Siena | 1,471 | 233,830 |
| Tuscany | 9,304 | 2,549,142 |
| 39. Ancona | 762 | 302,172 |
| 40. Ascoli Piceno | 796 | 245,172 |
| 41. Macerata | 1,087 | 259,429 |
| 42. Pesaro and Urbino | 1,118 | 253,982 |
| Marches | 3,763 | 1,060,755 |
| 43. Perugia (Umbria) | 3,748 | 667,210 |
| 44. Rome | 4,663 | 1,196,909 |
| 45. Aquila degli Abruzzi | 2,484 | 396,629 |
| 46. Campobasso | 1,691 | 366,571 |
| 47. Chieti | 1,138 | 370,907 |
| 48. Teramo | 1,067 | 307,444 |
| Abruzzi and Melise | 6,380 | 1,441,551 |
| 49. Avellino | 1,172 | 402,425 |
| 50. Benevento | 818 | 256,504 |
| 51. Caserta | 2,033 | 785,357 |
| 52. Naples | 350 | 1,151,834 |
| 53. Salerno | 1,916 | 564,328 |
| Campania | 6,289 | 3,160,448 |
| 54. Bari | 2,065 | 827,698 |
| 55. Foggia | 2,688 | 425,450 |
| 56. Lecce | 2,623 | 706,520 |
| Apulia | 7,376 | 1,959,668 |
| 57. Potenza (Basilicata) | 3,845 | 490,705 |
| 58. Catanzaro | 2,030 | 476,705 |
| 59. Cosenza | 2,568 | 465,267 |
| 60. Reggio di Calabria | 1,221 | 428,714 |
| Calabria | 5,819 | 1,370,208 |
| 61. Caltanissetta | 1,263 | 327,977 |
| 62. Catanlo | 1,917 | 705,412 |
| 63. Girgenti | 1,172 | 371,638 |
| 64. Messina | 1,246 | 543,809 |
| 65. Palermo | 1,948 | 785,357 |
| 66. Syracuse | 1,442 | 427,507 |
| 67. Trapani | 948 | 368,099 |
| Sicily | 9,936 | 3,529,799 |
| 68. Cagliari | 5,204 | 483,548 |
| 69. Sassari | 4,090 | 308.206 |
| Sardinia | 9,294 | 791,754 |
| Total | 110,623 | 32,475,253 |

The principal islands belonging to Italy are Sicily and Sardinia; the others include the Lipari Islands, Capri, Ischia, Giglio, Monte Cristo, Elba, etc. Rome is the capital. The principal cities are Naples, Milan, is the capital. The principal cities are Naples, Milan, Rome, Turin, Palermo, Florence, Bologna, Leghorn, Genoa, Venice, Cantania, Padua, Pavia, etc.

*Coast Line.*—The physical aspect of the Italian peninsula is diversified in the extreme. (For the islands,

see SARDINIA and SICILY.) By reason of its special shape and position, of its extending into the midst of the sea and of the many islands which belong to it, geographical Italy has a very extended coast line, of which only 51 per cent. belongs to the mainland and the rest to the islands. The length of the coast of the mainland of Italy has been estimated at about 1,450 miles, that of the islands of Sicily and Sardinia at about 850 miles; so that the whole coast-line, inclusive of the smaller islands, must amount to about 2,400 miles. It is not much broken. The whole shore of the Adriatic presents a comparatively smooth and continuous line, interrupted only by the spur of Gargano, which, by its south side, contributes to form the Gulf of Manfredonia. The largest gulf of all is that of Taranto, in the south. The west coast, though much more indented than the east, is more remarkable for the number, and occasionally for the beauty, of its bays, than for their magnitude. Commencing at the south extremity and proceeding north, the most important which present themselves, in succession, are those of St. Eufemia, Policastro, Salerno, Naples, Gaeta, and Genoa. The eastern shore is generally flat and uninteresting, presenting, particularly along its northern part, a long series of sandy islands and lagoons, which retard the progress of the rivers, dam up their mouths, and, depriving them of a proper outlet, occasion the formation of pestilential marshes. On the west coast the same thing is occasionally seen, but occurs on a large scale only in the Roman territory, where the Pontine Marshes, notwithstanding the proved practicability of draining them, are permitted to spread their poisonous malaria, and convert extensive tracts, of great natural fertility, into almost uninhabitable deserts. But with this very prominent exception, the west coast is considerably elevated, the ramifications of the mountains often stretching down and terminating in lofty cliffs, with a magnificent background of alpine heights. Few countries can boast of possessing scenery of this description equal to that which is exhibited by the Gulfs of Genoa and Naples.

*Mountains.*—The interior of Italy is finely diversified. The loftiest mountains of the Alps stand on its northern and northwestern frontiers, and shelter it from the rigors of the north, giving here a climate which is unrivaled for the general mildness of its temperature and the brightness of its sky. In this region are to be found many lofty mountains such as Mt. Viso (3,843 metres), in the Cotian Alps, the Gran Paradiso (4,061 metres), in the Gratian Alps, Mt. Blanc (4,810 metres), and Monte Rosa (4,638 metres) in the Pennine Alps, or Valletian Alps, the Adula (Rheinwaldhorn, 3,398 metres) in the Lepontine Alps, the Bernina (4,052 metres), the Orteles (3,905 metres), the Adamello (3,557 metres), the Wildspitze (3,770 metres) in the Rhetian Alps, the

Vedretta Marmolata (3,370 metres) in the Dolomitic, or Cadorine Alps, and many others. In immediate connection with the branch of the Alps called the Maritime Alps is the chain of the Apennines, which, first proceeding east till the Adriatic is approached, then turn south, and run down the middle of the peninsula through its whole length to the Straits of Messina; while numerous branches are thrown off laterally, and form an endless succession either of loftier hills clothed with forests, or gentler slopes covered with olives and vines. The mountains of the peninsula, as compared with the Alps, are not of any great extent or elevation, none of them attaining a height of 3,000 metres—except Mt. Ætna, which is out of the peninsula and is a volcano; that the greater number of them are scarcely 2,000 metres high. The highest peaks are found within the limits of the Marches of Abruzzo. In this region is Mt. Vettore (2,475 metres) in the Sibilline Mountains between Nera (Tiber) and Tronto; the Peak of Sevo (2,477 metres), to the right of the source of the Tronto; Terminillo (2,212 metres) to the right of Upper Velino (Nera Tiber); the Gran Sasso d'Italia (The Great Rock of Italy) to the right of Upper Vomano, with many points higher than 2,000 metres, and Monte Corno (2,921 metres), which is the highest peak in the peninsula. Majella has also similar altitudes, among which the highest is Monte Amaro (2,795 metres) to the left of the source of Aventino (Sangro); then Mt. Velino (2,487 metres); Sirente (2,349 metres); Mt. Petroso (2,247 metres); Mt. Meta (2,241 metres); Viglio (2,150 metres), and about ten others. There are few considerable altitudes in the rest of the peninsula, one or two in the S. W. of the Basilicata, none in the islands except Ætna, and a few summits in Corsica, among which the highest is Monte Cinto (2,710 metres).

*Valleys and Plains.*—In the spaces between the mountains and hills lie valleys remarkable either for their wild romantic beauties or the fertility of their soil, such as the tableland of Aquila (Aterno), of Rieti (Velino), and of Perugia (Alto Tevere). In the north, enclosed between the ranges of the Alps and Apennines, is a plain of vast extent, stretching from the western frontiers of Piedmont, across Lombardy, to the shores of the Adriatic, and perhaps the most fertile in Europe. Other plains, still more attractive by their beauty, occur in various parts of the Italian peninsula, including those of Piedmont; the Venetian plains; plain of the Roman legations; plain of the *Campo Felice*, on which stands Vesuvius; the Apulian plain; the long, narrow Neapolitan plain of the Basilicata, 100 m. in length and 24 m. in breadth along the Gulf of Taranto.

*Rivers.*—The great majority of the rivers are navigable only for small coasting boats or barges. By far the most important is the Po (q.v.), which rises on the

borders of France, and flows into the Adriatic. It has the advantage of pursuing its course between the Alps and the Apennines, and deriving its supplies from both of them, conveyed from the Alps by the Dora Riparia, Dora Baltea, Sesia, Ticino, Adda, Oglio, and other tributaries on the left bank of the river, and by the Stura on its right bank; and from the Apennines by the Trebbia, Secchia, Panaro, etc., all on its right bank. Another river of some importance, which has its mouth at no great distance from the former, and is partly fed in the same way, is the Adige (*Etsch* in Austria); and the Bacchiglione, Brenta, Piave, Livenza, and Tagliamento, which are of much less importance, have their basins in Venetia or the northeastern part of Italy, and all fall, like the Po and the Adige, into the Gulf of Venice. Among the others are the Aterno, Sangro, Metauro, Ofanto, Bradano, also belonging to the Adriatic basin. In the southern part of Italy, the peninsula of which it consists is not only narrow in itself, but is divided by the central chain of the Apennines into two watersheds, each of which lies so near the shore as to leave no room for the formation of large rivers. The chief rivers in this region are the Arno, Tiber, Garigliano, and Volturno. The classical and historical associations of many of the Italian streams, even though mere rivulets, invest them with perennial interest.

*Canal System.*—The canal system is most extensive in the north. Nine principal canals in Lombardy irrigate the plains, and give commercial communication, contributing much to the prosperity of the district. The *Naviglio Grande*, or Ticinello, is the finest hydraulic construction in Italy, and communicates between the Ticino and Milan. It was begun 1179. The *Naviglio Martesana*, 38 m. long, connects Concesa, on the Adda, with Milan; the *Naviglio di Pavia* is 18 m. in length; the bifurcated *Naviglio d'Ostiglia* unites the Po with the Adige. 253 canals intersect Piedmont, with a length of 1,932 kilomèters. Venice comprises 203 navigable and 40 minor canals. Numerous canals have been constructed for drainage of the Pontine marshes. This system of water-communication was early carried to a high degree of efficiency in Italy and is of incalculable service in the agricultural districts.

*Lakes.*—The mountain lakes of Italy are famed for picturesque beauty. They are mostly in the n. provinces of Lombardy and Venetia. The principal are Lago di Garda, or Benaco, 370 sq. km. in extent; Lago Maggiore, or Verbano, 212 sq. km.; Lago di Como, or Latrio, 146 sq. km.; Lago di Lugano, or Ceresio, d'Iseo, or Sebino, di Varese; Trasimeno, or Lake of Perugia, 130 sq. km.; the Lago di Bolsena, 115 sq. km.; the Sabatino or Bracciano Lake, of Vico, of Albano, of Nemi, not far from Rome, situated in the craters of spent volcanoes; and many coast lagoons, such as the Venetian lagoon, the ample Val di Comacchio, situated North of Ravenna,

the Lakes of Lesina, of Salpi to the North and South of the spurs of Gargano, and several others.

*Geology and Soils.*—The general fertility of Italy is intimately connected with its geological structure. Except in the ranges of the Alps in the north, and the terminating branches of the Apennines in the south, granite and the metamorphic strata are not of frequent occurrence, and occupy a very limited extent of surface. On the other hand, volcanic rocks occupy considerable tracts, particularly on the west coasts of Naples and of the Roman territory. The sedimentary rocks of the Italian continent, with the exception of the metamorphic strata already referred to, are comparatively recent. At the bottom of the series is the Jura limestone, which is largely developed in the Apennines. The main body of it, commencing on the eastern frontiers of Tuscany, is continued in a broad zone far south into the old kingdom of Naples, where, after a partial interruption, it reappears in the southwest, chiefly in the province of Salerno, and partly in that of Potenza, and in the southeast in the province of Bari. It also occupies a considerable space on the north side of the Gulf of Gaeta, and on the western slope of Mount Gargano. It is likewise the prevailing rock in the north of Lombardy, where it stretches east from the shore of Lake Maggiore to the Austrian province of Illyria. Above the Jurassic limestone, and occupying almost an equal extent of surface, is the chalk, with its accompanying rocks. The main body of it stretches east along the Gulf of Genoa, and north into Emilia, then turns southward through Tuscany, forms a long narrow belt along the eastern side of the main body of the Jurassic limestone, and, though partially interrupted, finally reaches the extremity of the peninsula, where, in Cape St. Maria di Leuca, its white cliffs form the eastern entrance of the Gulf of Taranto. In the north of Naples a large tract, of a somewhat oval form, lies completely enclosed by the Jura limestone. The next strata in the ascending series belong to the Tertiary period, and consist of sandstones, travertin, and marl. These rocks occupy a considerable portion of Tuscany, and of the central part of Piedmont between Turin and Alessandria, but receive their chief development on the east coast, where, without attaining much width, they stretch without interruption from the neighborhood of Rimini to the northwest extremity of the spur. Here the main body, spreading out, is continued south-southeast, and forms the greater part of the shore of the Gulf of Taranto. Another branch, still skirting the east coast, reaches its extremity in the Gulf of Taranto. Above all the ancient strata now mentioned are immense diluvial and alluvial deposits, still in course of gradual augmentation. Of these partial tracts are found both on the coast of Tuscany and the maritime provinces on the west near Rome, particularly the Pontine Marshes; but they are in-

significant in comparison with the space which they occupy in the luxuriant plains of Lombardy, not only forming extensive flats along the northern shores of the Adriatic from the Gulf of Trieste to the Gulf of Venice, but filling the greater part of the basin of the Po.

*Mineral Resources.*—The chief minerals are sulphur, zinc, lead, copper, coal, iron, antimony, gold, mercury, manganese, silver, arsenic, salt, graphite, borax, petroleum and asphalt. The chief sulphur mines are in Sicily; Elba is noted for the quality of its iron ore, and Lombardy and Sardinia for their zinc ore. There are over 1,100 productive mines of various minerals, employing 68,000 workers, with a total output valued at nearly $17,000,000.

*Climate.*—In the n. provinces, the climate is temperate, salubrious, and frequently severe in winter; in the centre, it assumes a more genial and sunny character; while the heat of the s. extremity is almost tropical. The singular clearness of the atmosphere sets off the landscape and monumental beauties of Italy with brilliant effect. The drawbacks of Italy's climate are the piercing tramontana or mountain winds; the deadly sirocco, which blights all nature at seasons along the w. coast; and the malaria or noxious miasmata which issue from the Maremma of Tuscany, the Pontine Marshes, and the Venetian lagoons, generating pestilential fevers and aguish diseases in the summer season. The mean temperature of the leading divisions of the country through a whole year was as follows: Milan, 55° 4′ F.; Rome, 59°; Palermo, 62° 5′; in Sardinia, 60° 5′. The highest temperature at Rome is 95°, and in Sicily 97° to 104°.

*Forestry.*—The sweet chestnut constitutes the larger part of the forests that cover the lower slopes of the Alps and the Apennines, while pine, fir, poplar, myrtle, and other evergreens, clothe the hills of a considerable portion of rest of the country. There is a governmental department of forestry directed by the ministry of agriculture, industry and commerce, through a forestry council. Exclusive of chestnut plantations, the forest area is over 10,000,000 acres producing lumber, firewood, charcoal, and secondary produce to the annual value of over $17,600,000.

*Flora.*—In the Alpine regions all the plants belonging to cold climates flourish, while the southern regions possess a real tropical flora. The olive, mulberry, fig, orange, citron, pomegranate, pistachio, jujube, and date grow in the south and in suitable places in the north. In the extreme south the cotton-plant, sugarcane, Indian fig, agave, and other tropical plants are cultivated. Everywhere is seen the grapevine. The other vegetable products are common to Italy and the rest of Europe.

*Fauna.*—The mountains of Italy afford a retreat to the lynx, chamois, brown bear, and wolf, while among those of Sardinia is found the moufflon or wild sheep. The por-

cupine is very generally found in the Apennines. The paiered fox (different from the common species) and the blind mole are also found. The birds, which are very numerous, comprise most of the species of Central Europe, a large number of those belonging to the eastern part of Europe, and some African birds, especially the Egyptian vulture. Among the reptiles are the common viper and the asp; other noxious creatures are the scorpion and the tarantula. The marine fauna of Italy is also very comprehensive, including all the varieties of fish which are found in the Mediterranean. The fisheries embrace anchovies, sardines, tunnies, sword-fish, etc. The coral polyp (among other species the madrepore) is also of economic importance, there being a large number of persons employed in the coral fishery.

*Land Tenure.*—There are three systems of land tenure; that of peasant proprietorship which exists throughout Italy, but chiefly in Piedmont and Liguria; the rent system common in Lombardy and Venetia; and the partnership system, general in Tuscany, the Marches and Umbria, slightly in Sardinia, Calabria, and Apulia, but abandoned in Barese and the province of Naples. The latter system consists in a form of partnership between the proprietor and the cultivator, profits and losses being equally divided, and the families of the partners subsisting in many cases entirely on the common produce of the cultivation.

*Agriculture* forms the chief support of the population, and the land is very productive in almost all parts of the kingdom, although it is not everywhere equally well cultivated. The best cultivation, aided by an excellent system of irrigation, is found in Lombardy, Venetia, Piedmont, Tuscany, and the parts of Emilia adjoining the Po. The most neglected parts of the country in point of cultivation are the islands of Sicily and Sardinia. About 85 per cent of the surface of Italy is productive, and 15 per cent unproductive. Of the productive land again about 41 per cent consists of arable land and vineyards, 21 per cent of meadows and pastures, 5 per cent of olive and chestnut plantations, and 18 per cent of forests. Italy may be divided into four agricultural zones or regions:—(1) the olive, orange, and citron region, embracing Sicily and Sardinia, the Neapolitan provinces except the Abruzzi, and the part of the coast of Liguria called Riviera di Ponente; (2) the region of olives and pines, embracing the Abruzzi, Umbria, Tuscany, and the part of the Ligurian coast called Riviera di Levante; (3) the vine and oak region, embracing Lombardy, Venetia except the province of Udine, the provinces of Parma, Piacenza, Modena, Novara, Alessandria, and Lomellina, now part of the province of Pavia; (4) the vine and chestnut region, comprising the two large Piedmontese provinces of Turin and Cuneo, and the province of Udine in Venetia. All kinds of cereals are cultivated.

The wheat is of fine quality, and is chiefly used as a breadstuff by the wealthier classes, while maize and rye are principally used by the poor, who also consume great quantities of pulse and chestnuts. Among plants used in commerce and manufacture the following are grown: hemp and madder, which are articles of export, flax, tobacco, hops, and rape in small quantities, saffron, cotton (in the level districts of the province of Salerno, and of Calabria, Sicily, and Sardinia), and sugar-cane in Sicily and Sardinia. The commoner kinds of fruit-trees are the objects of attention everywhere, and the cultivation of southern fruits is carried on particularly in the Neapolitan and Sicilian provinces, and in Sardinia, and furnishes large quantities for export. Chestnuts are frequently used as a substitute for bread. In the cultivation of the olive Italy surpasses all other European states; so that, although the home consumption of olive-oil is very large, there remains a considerable quantity for exportation. There is also a very large production of wine. The average annual production of some of the above-mentioned objects of cultivation may be estimated as follows: Wheat 143,400,000 bushels, maize 90,000,000 bushels, oats 19,360,000 bushels, rye and barley 18,400,000 bushels, rice 27,000,000 bushels, corn 100,000,000 bushels, other cereals 18,000,000 bushels; potatoes 20,000,000 bushels, hemp 110,000,000 pounds, flax 30,000,000 pounds, cotton 20,000,000 pounds, tobacco 7,000,000 pounds, olive-oil 80,000,000 gallons, wine 900,000,000 gallons.

Italy anciently was celebrated for its wines, the best of which were obtained from the vineyards on the two slopes of the Apennines. At the present day the wines of Italy are admittedly inferior to their ancient reputation. The vines yield many wines, among which the liqueur wines are distinguished for their good quality; but those which serve for daily use cannot enter into competition with those of France. The most of them are at once sweet and harsh, often coarse, and although they appear to combine much body and strength they do not easily bear transport, and deteriorate in little time, even without being removed to a distance. Their bad quality proceeds not only from the want of care shown in the cultivation of the vines, but also from the bad processes employed in the manufacture. Among the liqueur wines which are so abundant in Italy may be mentioned the lacryma-Christi, nasco, giro, tinto, Malmsey, aleatico, and muscat. The most famous of the Italian red wines are those of Carmignano in Tuscany, and those of the Isle of Elba, Bari, and Ischia. The white wines of Marsala and Castel-Veterano are compared to Madeiras of the second class.

*Stock-raising.*—The rearing of live-stock is an important industry in Italy, which exports cattle, sheep,

goats, and swine. Horses are imported, and also sheep's wool. The cultivation of green crops as food for cattle is scarcely known. The cattle are estimated to number about 5,000,000 (including 15,000 buffaloes), many of them team oxen. Sheep number 6,500,000, swine about 2,000,000. Some camels are perfectly acclimated near Pisa in the low-lying tracts of San Rossore. The cheese of Italy is famous, especially the Parmesan, in 1905 the exports being 171,000 cwt.; of butter the exports were 60,000 cwt.

*Manufactures.*—Since the consolidation of the Italian kingdom the manufactures of the country have made considerable advances, especialy in the department of Tuscany and the northern provinces. They now afford support to 13 per cent. of the whole population. Machine-making, although not sufficing to meet the internal wants of the country, nevertheless employs many workmen, especially in Genoa and neighborhood, Turin, Milan, and Naples. Coach and carriage making is an important industry in Milan. Ship-building is largely carried on in Liguria. Musical instruments are made in all the capitals. Especially famous are the bow instruments of Cremona, and nowhere are violin strings made so well as in the Abruzzi. In the iron industry the department of Lombardy stands at the head; and in that department more particularly the provinces of Brescia, Como, and Milan. The town of Brescia is the chief seat of the cutlery manufactures. The manufacture of gold and silver wares is very flourishing in Rome, Milan, Naples, Genoa, Venice, and Catania, and like that of articles in bronze has long been an important branch of Italian manufacturing industry. Italy is very rich in marble of the most beautiful and various colors and markings. The department most celebrated in this respect is Tuscany, especcially the province of Massa e Carrara, and the district of Serravezza in the province of Lucca. The district of Volterra in the province of Pisa is noted for its alabaster quarries and the making of articles in alabaster. The cities of Rome, Naples, and Florence enjoy a world-wide reputation for their cameos and mosaics, as also (along with Leghorn and Genoa) for articles of coral. Earthenware manufactures have long been carried on in Italy with the best success. The articles in terra-cotta especially are remarkable for the beauty of their forms. Venice and the neighboring island of Murano are celebrated for the manufacture of glass beads, but the other glass manufactures of Italy do not nearly suffice for the home consumption. In the department of chemical industries the production of boracic acid (obtained from the lagoons of Tuscany) and of tartaric and citric acids, the manufacture of soap (of great conscquence in Venicc), and the preparation of alizarine or madder-red at the mouth of the Sarno, may be particularly men-

tioned. Among articles used for meat or drink, pickled meat and sausages (which are exported to a considerable extent), and liqueurs and rosolios, are the most important which are made in Italy. The sugar industry holds a very subordinate place, as does also the brewing of beer. The manufacture of tobacco is a state monopoly, and employs about 15,000 hands. The spinning and weaving industries in Italy are in some branches very highly developed. The most important of these are the silk manufactures, which form one of the chief sources of the national wealth. With the exception of Abruzzi, Basilicata, and the island of Sardinia, all the provinces of the kingdom take part in the preparation of the raw silk which is used in the manufacture, but this is more especially the case in Lombardy, Piedmont, and Venetia. The rearing of silkworms is more largely carried on in Italy than in any other country in Europe. The weaving is a very extensive branch of manufacture in Como, Genoa, Caserta, Milan, Turin, Florence, and Naples. The cotton manufacture is, as a textile industry, next to that of silk, and has greatly increased in recent years, the factories being chiefly in Lombardy, Piedmont, Lucca, and the Genoese district. Woolen manufactures are carried on chiefly in Upper Italy, in Piedmont and Venetia, in the provinces of Novara, Vicenza, and Turin. The import of woolen yarns, and still more so of woolen fabrics, is large. Flax, hemp, and jute support industries of some importance. Hand-spinning is general where the raw material is grown. Good fabrics are woven, although they are not able to compete with those made in England, France, Germany, and Austria. Hempen fabrics, which are chiefly produced in the provinces of Bologna and Ferrara, where rope-making also plays an important part, are articles of export. Tanning is carried on in almost every part of the peninsula. There are in several places, but chiefly Genoa and Naples, factories for the making of gloves, boots, and shoes. The paper manufacture is flourishing. In the making of straw hats and other articles in plaited straw, Italy maintains the first place among the countries of Europe. The chief seat of this industry is in Tuscany (especially Florence and its environs). The making of furniture, and of articles of turnery, and articles used for personal adornment, as well as the manufacture of felt and silk hats, may be mentioned among the other manufacturing industries carried on in Italy.

*Fisheries.*—The sea and fresh-water fisheries are considerable; the Mediterranean furnishing immense quantities of tunny, anchovies, sardines, mullet, pilchards, and mackerel. The export of anchovies and sardines is of vast extent. The river-fisheries yield salmon, trout, sturgeon, lampreys, tench, and barbel, etc.; and the lagoons contain excellently flavored eels. The crustaceans and shell fish are excellent.

*Commerce.*—Among the exports are raw silk, rice, fish, fruits of various kinds, marble, alabaster, sulphur, alum, silks, velvets, cloth of gold and silver, perfumes, mosaics in stone and wood, carvings in wood, macaroni and similar culinary pastes, porcelain, majolica, preserved fruits and meats, musical instruments, jewelry, objects of art, olive-oil and hemp, oranges and lemons, chemical products, shumac, and wine; of import, cottons, iron, coal, and woolens, silk, wood and straw, minerals, metals, tools, stone and earthenware, animals, etc. The trade of Italy is chiefly with France, the United Kingdom, the United States, Germany, Austria, Switzerland, and Russia, the United Kingdom sending in 21 per cent. of the imports, and the United States being second with 13 per cent. In the foreign trade of the United States, Italy occupies the eighth place in exports, and the tenth place in imports, the largest items of import being raw silk, sulphur, and lemons. The imports have been approximately as follows: 1900 $340,000,000; 1901 $344,000,000; 1902 $355,000,000; 1903 $372,000,000; 1904 $383,000,000; and 1905 $416,000,000. In 1905 the largest items of import were minerals, metals and tools $61,606,200; stone, earth, pottery, glass, and crystal $45,799,200; cereals, flour, etc. $56,948,600; cotton $54,489,400; silk $46,365,800. The largest export was silk in 1905 being valued at $122,419,600; other exports were cereals, flour, macaroni, etc. $40,746,400; animals and their products $38,653,800. The records of exports is as follows: 1900 $267,600,000; 1901 $274,800,000; 1902 $294,400,000; 1903 $303,400,000; 1904 $203,400,000; 1905 $341,400,000.

*Railways, Telegraphs, and Post-office.*—The length of the railways in operation, including Sicily and Sardinia, is now about 10,150 miles, of which considerably more than half belong to the state. The first line of railway was opened in 1839, but the process of construction was for a long time slow. In recent years the state has engaged in constructing railways, and has also obtained possession of others by purchase, but all are now worked by private companies. It is expected that when all the lines undertaken by the government have been completed, the total cost of construction will have amounted to 5,000,000,000 lire, or $1,000.000,000.

The total length of the telegraph lines in operation in the kingdom in 1904 was 30,094 miles, most of which belong to the state. The total number of inland despatches amounts to between eight and nine millions annually. The post-office in the course of the year now transmits considerably more than 350,000,000 letters and post-cards. The number of post-offices in the kingdom, including collecting boxes, is over 8,900.

*Money, Weights, and Measures.*—The monetary system of Italy is based on the Decimal System, the lira, equivalent to the French franc, being divided into 100 cen-

tesimi. The lira is equal to about 20 cents. The weights and measures also, are those of the metric system, the French names having such modifications as are necessary to give them an Italian form.

*Banking.*—There is no national bank in Italy and since 1893 only three banks of issue. The chief of these is the Bank of Italy, formed by the union of the National Bank of the Kingdom of Italy, founded in 1850, with a share capital of $40,000,000, and having its chief seats in Florence, Genoa, Milan, Naples, Palermo, Rome, Turin, and Venice; with the National Bank of Tuscany, founded in 1857, share capital $10,000,000; and the Tuscan Credit Bank, founded in 1860, share capital $12,000,000. The other two banks of issue are the Bank of Naples, founded in the 16th century; and the Bank of Sicily, founded in 1843; chief seats, Palermo and Messina. The maximum and normal limit of the circulation of the above is fixed at about $202,000,000. Of these $146,000,000 at the Italian Bank of Italy, $45,200,000 at the Bank of Naples; $10,340,000 at the Bank of Sicily. The reserve being 4 per cent. of the note circulation. These banks are subject to supervision of the government. The director of the Bank of Italy is confirmed in his charge by the government. Those of Naples and Sicily are directly appointed.

The circulation of bank notes payable to bearer was, in 1905, for the Bank of Italy, about $186,000,000; Bank of Naples, $5,800,000; for the Bank of Sicily, $13,500,000. The metallic reserve was, 1905, Dec. 31, for the three institutes, $215,000,000 in gold; $162,000,000 in silver; $22,000,000 on foreign security and $27,000,000 on Italian securities. The Societies of Actionists maintain the popular banks, and have only a limited responsibility. Their system is one of co-operation, loaning money to members only and sharing profits among themselves. In 1902 there were 163 banks with a capital of about $51,000,000.

*Finances.*—The finances of Italy are not in a satisfactory condition, this being due partly to the expensive wars which were necessary in order to establish and consolidate the unity of the kingdom, partly to the increase of the public debt in consequence of the successive annexations of different portions of the Italian territory, since the present kingdom of Italy has naturally inherited the debt of each of the separate states of which it was formed, partly to the large sums expended on railways and on the army and navy. At the end of 1874 the nominal capital of the whole Italian debt was valued at a sum equal to $1,976,717,845. In 1905 the funded debt amounted to 13,139,457,095 lire, including 1,664,139,320 lire which constituted the capitalized value of life annuities; the floating debt amounted to 1,202,055,594 lire, comprising the current liabilities of the treasury exclusive of 429,743,060 lire of circulating state notes; the total debt in United States

currency was $2,767,911,949, against which the treasury held liquid assets to the amount of 994,523,889 lire or $191,943,111. The Italian budget divides the revenue and expenditure into ordinary and extraordinary. According to the budget of 1905–6 the total revenue estimated for that year was about $470,000,000, and the total expenditure $440,000,000. For a number of years following the establishment of the kingdom (1861) the expenditure generally exceeded the revenue, the deficit rising in one year (1866) to $123,400,000. From that date the deficit decreased steadily, and 1884–5 showed a surplus of $12,000,000. Such a surplus, however, is rare, though for the past nine years there has been an actual surplus, that of 1905–6 amounting to about $30,000,000. The progressive increase of the receipts to balance the expenditure is mainly due to two causes, the establishment of new taxes and the more careful collection of the old ones. Besides the general budget there is one for communes and another for provinces, both of which exhibit, if not an altogether satisfactory condition, at least an improving one.

*Constitution and Government.*—The constitution of the kingdom of Italy is a limited monarchy. It is based upon the fundamental statute of 1848, March 4, fixing that of the kingdom of Sardinia. The throne is hereditary in the male line of the royal house of Savoy. The king attains his majority on completing his 18th year. He exercises the power of legislation only in conjunction with a national parliament, consisting of two chambers. The first chamber is called the senate, and is composed of the princes of the blood, and an indefinite number of members appointed for life by the king. These last must be above 40 years of age, and must be distinguished either by holding or having held some high office either in church or state, or by eminent services in literature, science, art, or any other pursuit tending to the benefit of the nation, or they must have paid for at least three years a sum not less than 3,000 lire ($600) in direct taxes. In 1906 the senate numbered 356 members. The second chamber is called the chamber of deputies, and consists of 508 members, who are elected by a majority of all the citizens above 21 years of age who are in the enjoyment of civil and political rights, can read and write, and who pay direct taxes to the state or the provincial administration to the amount of 20 lire ($4) yearly. Certain persons enjoy the franchise independently of the taxation test, such as members of learned academies and of chambers of commerce, professors, state officials, members of knightly orders, doctors, advocates, etc. For the election of the members of the chamber of deputies the whole country is divided into electoral colleges or districts. Any one who has the right of voting and has completed his 30th year may be elected, unless he be a clergyman or an officer of

state. Some officers of state, however, may be elected. The king calls the chambers together every year. The sittings are public. The president of the senate is appointed by the king, that of the chamber of deputies is elected by the chamber itself. The chamber of deputies has the right of impeaching ministers of the crown, in which case the senate is the court before which the impeachment is tried.

The executive power of the state is exercised by the king through responsible ministers and in Italy they have a double function: constitutional on the one hand, in which they assume the responsibility of the acts of the Crown before the parliament; administrative on the other hand when they take the active direction of an important branch of public administration. In addition to this there is a state council possessing consultative powers, and authorized to decide on questions of competence arising between the administrative departments and the law-courts, as well as in cases of dispute between the state and its creditors. There are 11 departments in the government: 1, the ministry of foreign affairs, to which is attached the diplomatic council; 2, the ministry of the interior (on it are dependent the departments of police and of public sanitation, the local government offices, the communal administrations, the prisons, etc.). 3, the ministry of justice and religion; 4, the ministry of finance, with the permanent council of public finance; 5, the ministry of the exchequer; 6, the ministry of war; 7, the ministry of navy, with the supreme council for naval affairs; 8, the ministry of public instruction, with the supreme council of instruction; 9, the ministry of public works, with the supreme council for public works including transportation and railroads; 10, the ministry of agriculture, industry, and commerce, with the councils for trade and manufactures, agriculture, mines, and woods and forests; and 11, the ministry of postal communications and telegraphs.

*Local Government.*—The local government in Italy is administered partly by bureaucratic functionaries appointed by the central government, and partly by independent civic corporations under the administration of officials elected by the people. Many of the public services have in various portions of the kingdom special administrative officials. The greater number of the local services that are under government control are administered by prefects and sub-prefects. The prefect is assisted by three counsellors of the prefecture, who individually administer some of the various branches of the service. In the superintendence of the communes and the provinces, the Prefect is assisted by the provincial administrative 'Giunta,' a body presided over by the Prefect, consisting of two counsellors of the prefecture (besides a supplementary), and four other members (two supplementary) elected by the provincial council.

## ITALY.

The communes and provinces are independent public organizations under the administration of elected officials. The affairs of every commune are administered by a Communal Council, a 'Giunta,' and a mayor. The Communal Council consists of a number of counsellors varying from 80 to 15, according to the population of the commune. The counsellors are elected by the electors of the commune every two years. Each counsellor remains in office six years (Law of 1904, Feb. 11).

The Communal Council meets twice a year in ordinary session; and in extraordinary session whenever it is necessary to do so. The Communal 'Giunta' is composed of a number of members, varying from ten to two (besides two to four supplementaries) according to the population of the commune. The members of the 'Giunta' are elected by the council, and chosen from among the counsellors. They are all elected anew every four years. The mayor is elected by the Communal Council, and chosen from among its members. He may be recalled by the Council, suspended from office by the prefect, and removed by royal decree. The mayor presides over and convokes the 'Giunta' and the Council. The mayor of each commune acts as a government official in matters of general concern; he is dependent in this capacity on the Prefect and Ministry. In the small communes in the same way the mayor is head of the police.

*Judiciary.*—For the administration of the law there are justices of peace, county judges, tribunals, appellate courts, assizes, and the supreme court. Special laws regulate the jurisdiction of military and naval crimes. The magistrates (except the justices of the peace) are all nominated by the king, at the proposal of the minister of justice, from among those who have the requirements prescribed by law. In every community there is a justice of the peace, nominated by the first president of the court of appeals of his district, who must be selected from a list of eligibles submitted to him by the municipal authorities. In every district there is a county judge. The county judges pass sentence, in civil and commercial matters, in law suits of a greater value than those over which the justice of the peace presides, but which may not exceed 1,500 lire, except suits of honorary civil or political rights wherein the State is interested. In penal matters the county judge may pass sentence upon all crimes not libellous.

Those members of judicial authority called tribunes are called judges, and county judges can be nominated judges after a certain term of service. In the first instance the tribunes try all cases, civil, commercial and criminal, exceeding the competency of the county judge. They also try heavier criminal and libel cases. The tribunes appeal cases sentenced by the county judge in the first instance as well as civil, commercial and penal

matters. Every appellate court consists of at least two sections, one for the penal cases, and one for civil cases. At the head of each of the sections composing the court is a president. Before the appellate court are brought, on appeal, all penal and civil cases judged by the tribunes in the first instance. In civil cases the court judges with five members; in penal cases, with four members. Assize courts are exclusively for penal cases, and are distinguished from all other magistracy because there are coöperating judges, called 'jurors,' who are selected by lot from a list of citizens, which is revised every year. There are one or more courts of assizes for every district of appellate court. They sit generally twice every year, in spring and in autumn. The court of assizes is presided over by a magistrate who is counsellor of the appellate court or president of the tribunal. There are five courts of cassation in Italy. The court of cassation in handling civil matters is composed of seven members. It examines the sentences from which an appeal has been taken, and if no error of justice appear the appeal is rejected and the case finished. But if some error of justice (in form or substance) appear, the sentence is annulled and, without judgment, is dismissed to another magistrate of equal rank to that whose decision has been cancelled. This last magistrate is free to judge according to his personal opinion, but his sentence is also subject to an appeal to the court of cassation in many cases. The court of cassation in Rome is also invested with the power of regulating questions of jurisdiction between the administrative authorities. The court of accounts is instituted to examine and decide all controversies which concern the accountings of the administration of the State, of the provinces and communities, etc.

*Army and Navy.*—All men capable of bearing arms are amenable to military service from the end of their 20th to the end of their 30th year. The whole kingdom is formed into 12 military districts, each with an army corps. In 1906 the war strength of the army was: Officers, 43,632; non-commissioned officers and men, 1,942,560; guns, 2,660. The peace strength was: Non-commissioned officers and men, 258,632; guns, 1,460, exclusive of reserves of active army, first and second reserves and fortress guns. The Italian Navy in 1906 consisted of: First-class battleships, 9; second and third-class battleships, 11; coast defense ships, 4; armored cruisers, 7; other cruisers, 32; torpedo boat destroyers, 19; torpedo boats, 141. Officers, 1,560; men, 25,800. For military instruction there are The War School of Turin, The Military Academy of Turin, The School of Artillery and Applied Engineering, of Turin, The Military School of Modena, The School of Applied Military Hygiene, of Florence, The Military Colleges of Naples and Rome, The Central School of Infantry in Parma, The Cavalry

School of Pinerole, The Central School of Artillery on the Poligono del Nettuno near Rome, The Military School of Instruction in the Use of Arms, in Rome. Those dependent on the Ministry of Marine are The Naval Academy of Leghorn, The School for Apprentice-machinists in Venice.

*Religion.*—The Roman Catholic is the state religion, but all other creeds are tolerated, and the adherents of all religions have equal municipal and political rights. By the law of May 13, 1871, the person of the Pope is pronounced sacred and inviolable, and the Italian government pays sovereign honors to him and guarantees him an annual dotation of 3,225,000 lire ($645,000). He also enjoys the possession of the palaces of the Vatican and the Lateran, and the villa of Castle Gandolfo, without taxes, and these palaces are not under the jurisdiction of the state. The Pope is free in the exercise of his spiritual functions, and free intercourse is guaranteed between the head of the church and the episcopate, as well as the whole Catholic world. The church has the sole right of nomination to all ecclesiastical offices and benefices. But this guarantee-law, as it is called, which in fact determines the relations between church and state, has never been acknowledged by the Popes, who have hitherto declined to accept the dotations. In the kingdom of Italy there are 51 archbishopries, and 223 bishoprics, besides 6 cardinal-bishops whose sees are within the country. The parish priests number about 76,500.

*Education.*—Public instruction in the kingdom of Italy is essentially of three grades: (1) Primary and popular; (2) intermediate and secondary; (3) high school grade. Compulsory elementary instruction, prescribed by the law of 1877, July 15, No. 3961, is enforced for all children who have completed their 6th year, and do not receive adequate instruction at their homes or in private schools; and this requirement was through a later law of 1904, July 8, No. 407, extended to the 12th year of age. Education is practically free up to the university. Besides the regular day schools there are evening schools, in which elementary education may be carried further.

The subsidiary branches of the elementary schools are: the *Patronali;* the *Educatori* and the *Recreatori,* the kindergartens, and the professional schools, all of which are very little under legislative control or regulation.

The kindergartens number more than 2,000 public institutions, with 140,000 boys and 132,000 girls; and more than 1,300 private institutions with 42,000 boys and 43,000 girls.

A new institution is the People's University dating from 1900. That of Turin may be called the original one.

There are in Upper Italy about four universities

in Piedmont and Liguria, seven in Lombardy, five in Venetia, eight in Emilia, one in Rome, one in Naples, three in the rest of southern Italy, three in Sicily; and many others are being established in various parts of Italy. The principal institutions for secondary education are the gymnasiums and lyceums, the former having a course of five years, the branches taught being Greek, Latin, Italian, history, geography, and arithmetic; the latter, having a course of three years, add to these subjects philosophy, mathematics, physics, chemistry, and natural history. No fees are charged either in gymnasium or lyceum. There were altogether in Italy in 1906, 215 royal, or government institutions of this order, of which 117 were lyceum-gymnasiums, 7 lyceums and 91 gymnasiums; and 86 pareggiati, *i.e.*, institutions maintained at the expense of local communities, but of the same grade as the government schools as regards the course of study, 26 of which are lyceum-gymnasiums, 9 lyceums, and 51 gymnasiums.

There are in operation 192 technical government, and 105 technical pareggiati schools; 18 nautical government schools, and one nautical pareggiati school.

Normal, or pedagogic instruction, is imparted in the normal boys' schools, and in the normal and complementary girls' schools. Of the former, 29 are under government control and three are pareggiati; of the latter, 78 are government schools, and 22 normal and six complementary pareggiati. There are besides three Regie Scuole normali di ginnastica in Rome (boys), at Turin and Naples (girls). There are also 43 Convitti Nazionali for boys and numerous female institutes under government control.

Dependent on the Ministry of Agriculture, industry and Commerce are: 34 schools of practical agriculture (especially for viticulture and enology); about 260 industrial and commercial schools; two schools of mines (at Iglesias and Caltanissetta); three intermediate schools (at Bologna, Genoa, and Rome). For the higher education there are no less than 21 universities, many of them of ancient foundation, and at one time of considerable renown. Of these 17 are royal and four free, the total attendance in 1905–6 being 24,038. The royal universities are: Bologna (founded 1119), Cagliari, Catania, Genoa, Macerata, Messina, Modena, Naples (1224), Padua (1222), Palermo, Parma (1422), Pavia (1390), Pisa (1329), Rome (1244), Sassari, Siena (1349), and Turin (1412). The free universities are Camerino, Ferrara, Perugia (1320), and Urbino.

There are also university institutes as follows: The Royal Institute in Florence, the Royal Scientific-Literary Academy of Milan, Royal Higher Institute of Technology of Milan, Royal Polytechnic High School of Naples, Royal Schools of Applied Engineering of Bologna, Rome and Turin, Royal Naval High School

of Genoa, Royal Schools of Veterinary Medicine of Milan, of Naples and of Turin. Special schools include the Royal Higher Institutes for Female Instructors in Florence and Rome, University Schools annexed to the Lyceum Gymnasiums of Acquila, Bari, and Catanzaro, The Royal Institute of Social Science 'Cesare Alfieri' in Florence with the annexed provincial School for Notarics, The Royal Schools of Theoretical and Practical Obstetrics of Milan, Novara, Venice and Vercelli, The R. Oriental Institute of Naples, the Business University, Luigi Bocconi, of Milan. The government also supports art schools at Bologna, Carrara, Florence, Lucca, Massa, Milan, Modena, Naples, Palermo, Parma, Rome, Turin and Venice; musical institutes and conservatories at Florence, Milan, Naples, Palermo and Parma; the three commercial high schools of Bari, Genoa, and Venice; the two high schools of agriculture of Milan and Portici; the higher Agrarian experimental institute of Perugia; the institute of forestry of Vallombrosa. There are also art schools not supported by the government at Bergamo, Ferrara, Genoa, Novara, Pavia, Perugia, Piacenza, Pietrosanta, Ravenna, Tiena, Urbino, Vercelli and Verona; and musical institutes at Bologna, Pesaro, Rome, Turin, and Venice.

*History.*—For the ancient history of Italy see ROME: also ETRURIA; UMBRIA; etc. At the dawn of modern history, the Western Roman Empire fell before a mixed horde of barbarous mercenaries composed chiefly of the Heruli, who proclaimed their leader, Odoacer, king of Italy, 476. After 13 years of military despotism, he was slain, and his followers were vanquished by the Ostrogoths, led by their great king, Theodoric. The Ostrogoths (see GOTHS), in their turn, were vanquished (552); and Italy was then governed by an exarch, or delegate of the emperor of Constantinople, whose seat was Ravenna. Narses, the first exarch, having been disgraced, in revenge invited the Lombards to invade Italy (568); and under their rule the ancient political system of n. Italy was superseded by the introduction of feudal and Teutonic institutions. The Lombards, were conquered by Pepin (754) and Charlemagne (744), the latter being crowned emperor. The Lombards, however, retained the great duchies of Benevento, Spoleto, etc., till the advent of the Normans. In 842, the Saracens invaded Italy and took possession of many important places on the s. coast, which they held till 1016, when they were driven out by the Normans. On the fall of the Carlovingian dynasty (888), the crown of Italy fell to Berengarius I., chief of the Friuli, whose descendant, Berengarius II., did homage to Otho I. of Germany as his lord-paramount (951); and in 961, Otho deposed his vassal, and assumed sovereign rights over the Italian kingdom. From this period, the chief towns of Italy rapidly emerged from their previous insignificance. A

foremost object of Otho and his successors was the abasement of the papacy; and for a time these emperors successfully arrogated to themselves the right of nominating to the chair of St. Peter the candidate most attached to imperial rule. The accession of Konrad was the signal for various tumultuous risings of the Italians against their German rulers, who had become the object of general detestation. Important feudal modifications during this reign tended still further to weaken the great feudal lords, and to exalt the inferior vassals and citizens. Under the reign of his successor, Henry III., we find the spirit of association, alike for offense or defense, waxing strong in Italy. The aggrandizement of the great Guelphic House of Este (q.v.), the bloody wars of the Investiture (q.v.), and the establishment of an ameliorated form of municipal government (1100) were the three most notable events under the Franconian dynasty.

Under the Hohenstaufen dynasty, Italy had an interregnum from foreign rule of about 60 years, which, however, was wasted in suicidal conflicts between the two factions, Guelphs and Ghibellines. The most terrible incident of this period was the massacre at the Sicilian Vespers (q. v.). Notwithstanding the inveterate internecine feuds of Italy, it was a period of great splendor and prosperity. The free cities or republics of Italy rivalled kingdoms in the extent and importance of their commerce and manufactures, the advancement of art and science, the magnificence of their public edifices and monuments, and the prodigious individual and national wealth to which they attained. Unhappily, a spirit of rivalry and intolerance grew up during this period of mediæval splendor; and in the arbitrary attempt of these states to secure supremacy over each other, they gradually worked their own destruction.

From the Sicilian Vespers (1282) to the reign of Henry VII. (1308), the chief historical incidents were the war between Genoa and Pisa, ending in the abasement and ultimate decline of Pisa (1284); the quarrels of the Guelphic factions, the Bianchi and the Neri, in Tuscany; the papal efforts for their reconciliation (1301); the residence of the popes at Avignon (1304-77); and the rise into importance of the oligarchic republic of Venice (1311). During the first half of the 14th c., the German emperors made several fruitless attempts to regain political supremacy in Italy; but in 1355, Emperor Charles IV. gave up the struggle.

The tyrannical rule of several petty tyrants, of which the foremost were the Visconti or lords of Milan, replaced that of the emperors. From the middle of the 14th century to the end of the 15th, the collective history of Italy is intermitted, each city being ruled by some powerful local family—e. g., Verona by the Della

Scala, Padua by the Carrara, Ferrara by the Este families, and Mantua by the illustrious princes of Gonzaga; Milan by the Della Torre, Visconti, and Sforza families. See also GENOA; PISA; FLORENCE; VENICE; NAPLES; etc.

From 1495 to 1525 Italy was the theatre of the sanguinary struggles between France, the native rulers, and the Hapsburgs: but the battle of Pavia (1525) thoroughly established the ascendency of the German emperor, who appointed over the various states rulers of his own selection. During the 17th century, no events of note mark the history of Italy: the country being at peace, the various states pursued commercial traffic and industry, as far as their decreased limits permitted. In the following century, some territorial changes were effected during the war of the Spanish Succession. In 1793, Italy partially entered the European coalition against France, whose arms, however, under Napoleon proved victorious. By the treaty of Campo Formio, 1797, Oct. 17, the entire state of Venice was transferred to Austria, while the rest of the country, under various designations, became for the most part a dependency of France. In this anomalous condition it remained during the rule of Napoleon. After the battle of Waterloo, the final reconstitution of Italy was decreed as follows by the Congress of Vienna: the kingdom of Sardinia reverted to the House of Savoy, to which were added all the provinces of the Genoese republic; the Lombardo-Venetian kingdom fell to Austria; the principalities of Modena, Reggio, and Mirandola, to which were soon annexed Massa and Carrara, were restored to the family of Este; Lucca was created a duchy for the rightful Duke of Parma, whose hereditary state was conferred on Maria Louisa, ex-empress of the French; the duchy of Tuscany was restored to the Austro-Lorraine dynasty; the Papal States to the pope; the kingdom of Naples to the Bourbons; while the petty state of San Marino was allowed to retain its republican form; and Monaco remained an independent principality under the Prince of Valentinois.

By the Congress of Vienna, 1814, Italy was again cast at the feet of the papacy and of Austria, and this at a period when progressive aspirations were strongly reawakened in the Italian people. The system of resolute oppression adopted by the reinstated rulers speedily produced irreconcilable hostility between themselves and their subjects, and a network of secret societies for the organization of national resistance spread throughout the land. The first fruits of their organization were the risings of 1820 and 1821 in Piedmont and Naples, to demand constitutional rights. Austrian intervention quelled both these movements; and, 1831, when a similar rising occurred in Modena and the Roman states, it

was subdued with sanguinary ferocity by an Austrian army. In these movements no distinct tendency toward national unity is perceptible: and only on the accession of Charles Albert to the throne of Piedmont (1831) was this grand idea of modern Italy propounded by Joseph Mazzini, in an address to the king, urging him to assume the rôle of liberator and leader of Italy. The king of Piedmont by yielding in some degree to the spirit of his time, prepared for Piedmont pre-eminence throughout the country. The accession of Pope Pius IX., 1846, seemed the inauguration of a new era for Italy: a general amnesty was followed by wise, liberal measures, which were adopted also by Tuscany and Piedmont, in emulation of Rome. Naples and the other states resolutely refused every measure of reform, and by a simultaneous outbreak in Sicily and Milan in January, the great revolution of 1848 began in Italy. The revolution of France in February imparted a strong impulse to that of Italy and speedily Naples, Piedmont, and Rome conceded constitutional rights to the popular demands. The Milanese unanimously revolted against Austrian rule Mar. 17, and after five days of heroic fighting, the Austrians were expelled from the city, and Radetsky, with 70,000 troops, compelled to retreat from its walls. Mar. 29, Charles Albert entered Lombardy avowed champion of Italian independence and leader of the national struggle. All the sovereigns of Italy contributed their best troops for the war; and on the Roman volunteers setting out for Lombardy, the pope himself in public pronounced a solemn benediction on their banners.

But ere a month had elapsed, Pius IX. suddenly halted in his career of liberator of Italy, and, abandoning the national cause, launched (Apr. 19) a severe censure against 'this unjust and hurtful war,' which, chiefly by his own benediction, had been consecrated in the eyes of at least the more ignorant of the people. The recall of the Neapolitan troops was the first-fruits of the encyclical letter, which may be considered the tocsin of the subsequent fierce reaction through all Italy. For a time, however, the revolution made way; at the close of the year Rome became agitated; the pope fled to Gaeta; and Feb. 8, the Roman Republic was proclaimed, under the presidency of Mazzini. On the same day the Grand Duke of Tuscany abandoned his state. Piedmont again assumed the lead, but the disastrous battle of Novara (Mar. 23) finished the national Italian war of 1848. The treacherous French expedition against the Roman republic, and the return of the pope 1850, were the concluding acts of this revolution.

The reaction was complete and merciless in every state save Piedmont, the king of which kept faith with his subjects, and observed the constitutional forms conceded in 1848. Austrian troops exercised a crushing

tyranny, and from time to time Europe shuddered at the recital of the dark cruelties practiced in the dungeons of Naples and Rome. In the Congress of Paris, at the close of the Russian war (1856), Cavour (q.v.) forcibly exposed the unavoidable dangers of a continuance of Austrian and papal misrule. He strongly urged the expediency of a withdrawal of French and Austrian troops from Rome and the legations. In the beginning of 1859, King Victor Emmanuel proclaimed from the Sardinian parliament his intention of actively aiding in the deliverance of the oppressed Italian population from the yoke of Austria. Toward the close of the year, Sardinia and France jointly prepared for war with Austria, and 1859, Apr., the war commenced. The victories of Magenta and Solferino were quickly followed by the abrupt and inconclusive peace of Villafranca, 1859, July 11, by which a confederation of the Italian states with the papal protectorate was proposed as the best solution of Italy's difficulties. The whole of Italy energetically rejected the scheme; and early in 1860 the various states whose sovereigns were in flight from the Lombard campaign voluntarily declared in favor of annexation to the kingdom of Piedmont. 1860, Mar. 18, Parma, Modena, and the Emilian provinces were incorporated with Sardinia; and the grand duchy of Tuscany on the 22nd. Mar. 17, the law by which Victor Emmanuel assumed the title of King of Italy was promulgated amid universal rejoicings. Mar. 24 the provinces of Nice and Savoy were ceded to France. May 5, Garibaldi, with about a thousand volunteers, set sail from Genoa for Sicily, where a revolutionary outbreak had taken place. His swift and comparatively bloodless conquest of the Two Sicilies is one of the most extraordinary incidents in modern history. Meanwhile, the Sardinian generals Cialdini and Farini having advanced into the papal provinces, the papal forces under Lamoricière were routed at Castelfidardo, which was followed by the capture of 4,000 prisoners at Loretto, and the surrender of Lamoricière at Ancona. Thence the Sardinian forces marched into the Abruzzi, while Victor Emmanuel proceeded in person to Naples. On Nov. 7 at Teano, Garibaldi unconditionally relinquished to his sovereign the southern provinces liberated by his genius and valor. Umbria and the march of Ancona were next incorporated with the kingdom of Italy. The kingdom of Italy was formally recognized by all the great European powers with the exception of Austria. On the death of Cavour, 1861, June, the ministry of Baron Ricasoli was formed, but after a brief term of office was succeeded by that of Ratazzi, 1862, Mar. 31, whose avowed subserviency to the French empire created considerable alarm among the liberals of Italy. One of its earliest acts was the incorporation of the s. volunteer forces with the regular army. A great aggregate

meeting of deputies from all the liberal clubs of the kingdom was held under Garibaldi's presidency; and having previously been entertained at a grand banquet by the royal princes, he set out on his almost triumphal tour throughout Italy, with the view of organizing rifle clubs among the youth of all the chief cities. An apprehension on the part of the government that Garibaldi contemplated an armed expedition in aid of Venice led to stringent and unlooked-for measures of repression, which, it is believed, were made to appear prudent by intimations from France. Ministerial orders were next transmitted to Garibaldi, prohibiting any further organization of the rifle societies. 1862, June 20, Garibaldi arrived in Turin, and on the 28th landed at Palermo, in Sicily, where he met a warm reception from Prince Humbert, heir-apparent of the Italian crown. July 4, the ministry was seriously disturbed by the warmth with which Garibaldi denounced the French occupation of Rome. On the 7th a grand review at Palermo was held in his presence. Volunteers hastened to join him, with the avowed intention of proceeding to Rome, despite the royal proclamation which accused them of rebellion against their sovereign. A special message, accompanied by the royal proclamation, was forwarded by the king to Garibaldi, who, under the impression that he possessed the covert approbation of the sovereign, declined to desist in his expedition to Rome, but expressed his unshaken sentiments of loyalty to the king. Aug. 22, Sicily was declared in a state of siege, the liberal clubs were dissolved, and an armed force dispatched to pursue and disperse the volunteers. Garibaldi reached Catania on the 18th, and some days later succeeded in effecting a landing on the coast of Calabria with the greater part of his followers. General Cialdini having been appointed commissioner extraordinary in the island of Sicily, with full powers over the civil and military authorities, proceeded to the most stringent measures to effect the capture of Garibaldi. The 'affair of Aspromonte,' in which Garibaldi's small force of volunteers were compelled to surrender, their heroic leader ordering them not to fire on the royal troops, put an end to the semblance of revolution. The wounded chief was conveyed as a prisoner to the fortress of Varignano, at Spezzia. The amnesty granted to him and his followers by the Italian monarch enabled him to proceed to Pisa, whence he returned to his island-home Caprera.

On the meeting of the houses of parliament, the ministry of Ratazzi had to sustain a formidable attack from the liberal members, who demanded the impeachment of the premier and his colleagues. Ratazzi, finding himself unsupported by any section of the house, after an unavailing defense, resigned his portfolio Dec. 10, and was succeeded in office by Signor Farini (q.v.).

VICTOR EMANUEL II
King of Italy.

## ITALY.

At the close of the German-Italian war (see GERMANY), Venetia, 1866, Oct. 3, became part of the kingdom of Italy by treaty with Austria. Turin, chief town of Piedmont, was the cap. 1859–65; the court was transferred to Florence in the latter year. In 1867, the French army began to be withdrawn from Rome, and the national aspiration to have the Eternal City as cap. of the kingdom of Italy seemed now near its realization. Some of the French troops remained at Rome until the urgent necessities of the Franco-Prussian war compelled Emperor Louis Napoleon to withdraw them. The last detachment left the pontifical territory 1870, Aug. 8; and the Italian troops, under General Cadrona, entered Rome Sep. 20, after a short resistance by the pontifical troops, who ceased firing at the request of the pope. 1870, Oct. 2, the kingdom of Italy assumed the last of its extensive limits, when the whole of the papal states were absorbed by it, and Rome was its recognized capital; and thus were realized the aspirations of many generations, the dreams of Mazzini, and the policy of Count Cavour. The last seven years of Victor's reign were uneventful, but were marked by the further consolidation and progress of the kingdom; and after his death (1878 Jan.) his policy was maintained by his son Humbert. 1883, Apr. 12, specie payments were resumed; 1888, Italy took possession of Zulla, in the Egyptian Soudan, and notified the powers of the step, against which Egypt, by the Porte's direction, officially protested; a new penal code was adopted, in which the clergy were forbidden to interfere in any way in election matters or to make any demonstration against the general laws and the acquired rights of the kingdom, which intensified the strained relations of the govt. and the papacy, prevented a contemplated demonstration in Rome in favor of the restoration of the temporal power of the pope, and led the clergy to assume an aggressive attitude on the occasion of the 50th anniversary of Pope Leo's admission to the priesthood; and 1889, June 9, a statue of Giordano Bruno (q.v.) was unveiled in Rome in the presence of govt. officials, the pope protesting against the act. Two very important events took place during the reign of Humbert I.: the stipulations of the Triple Alliance, and the acquisition of colonies in Africa.

Her colonial possessions in Africa commenced with the acquisition of Assab in 1882, then with the occupation of Massaua in 1885. Wishing to occupy the high plateaus in Ethiopia, the Italians came into conflict with Emperor John of Abyssinia; but he, after a victory at Dogali in 1887, was forced to withdraw. Some years afterwards, Italy wished to exercise a sort of protectorate over the new Emperor Menelik, because of her occupation of some territory; he refused and war again broke out, and this, after some honorable defeats for

the Italians, ended with the disastrous conflicts of Adua and of Abba Garima (1906, March 1). Thus the dream of a vast African Empire vanished, and Italy was obliged to content herself with a more restricted territory, called Colonia Eritrea, which is being peacefully developed with hopes of a prosperous future. Besides this colony, there have been acquired upon the shores of Eastern Africa the colonies of Somalia (Somaliland) and Bessadir.

The reign of Humbert I. had a tragic ending. In consequence of a serious disagreement between the ministry of General Luigi Pelloux, who wished to restrict some liberties, and the more advanced party of the Chamber, which defended them, a conflict which became most acute and which at length reached obstructionist tactics and produced great resentment, an Italian anarchist left the United States, in order to revenge upon the irresponsible King the retrogressive attempts of the Minister, and killed Humbert I. at Monza 1900, July 29, awakening horror of the murderer and sympathy for the victim throughout the entire world. His young son, Victor Emmanuel III., ascended the throne. Consult Beauffort *Histoire de l'Invasion des Etats pontifieaux et du Siège de Rome* (1874); Coldstream, *The Institutions of Italy* (1895); Duffy, *The Tuscan Republics* (1892); Gallenga, *History of Piedmont* (1885); id. *Italy, Present and Future* (1887); Hodgkin, *Italy and Her Invaders* (1896–9); Hutton, *Italy and the Italians* (1902); King, *History of Italian Unity* (1899); King and Okey, *Italy Today* (1901); Lindsay and Rowe, *The Constitution of Italy* (Nos. 135 and 155 Transactions of Amer. Acad. of Pol. and Soc. Science, Phila.); O'Clery, *The Making of Italy* (1892); Probyn, *Italy from the Fall of Napoleon I.* (1892); Stillman, *The Union of Italy* (1898); Taylor, *Italy and the Italians* (1898); Thayer, *The Dawn of Italian Independenee* (1893); Witte, *Rome et l'Italie sous Léon XIII.* (1892).

*Italian Language and Literature.*—The Italian language, most musical of all the tongues of Europe, is descended from the Latin, and there have been various opinions as to the mode of the transition. In the view, however, of the scientific students of language, there is nothing special in the case; the changes are sufficiently accounted for by that tendency to phonetic decay or corruption always at work in a living tongue, and especially active in a chaotic and transition state of society like that of Italy at the downfall of the Roman empire. The already corrupt dialects of the uneducated become predominant, and being released from the fixing influence of a written literature, depart more and more from the grammatical standard; and in the case of Italy, the barbarian intruders would, to a still greater degree, mutilate the Latin, and introduce multitudes of words from the northern tongues. For cen-

turies, this corrupting process went on, in the course of which the Latin gradually divested itself of its original classical peculiarities, and degenerated into the impure or vulgar form known as the *Romana rustica* or *lingua Romanza*, which became the prevailing language of the various races of s. western Europe, and received from each some of the most salient characteristics of their own native dialects.

This 'rustic Latin' may be termed the direct offspring of Latin, and the parent of Italian: in the compositions of the Provencal poets we find one form of it elevated to the rank of a polished, or *illustre*, written language as early as the 10th century, while the form which prevailed in Italy continued as late as the 12th century, an uncouth and vulgar dialect, contemptuously excluded from all learned composition. In the Sicilian court of the Hohenstaufen emperor, Frederick II., the Italian dialect was first rescued from this state of degradation; adopted by this monarch as the choice language of his court, it became the medium of his own and his son's literary and poetic creations, while his learned friend and secretary, Pier delle Vigne, may be termed the earliest Italian poet; his odes and canzones, composed a hundred years before Dante, are in wonderfully pure Italian. The University of Naples, and several of the Sicilian schools, were founded by Frederick, whose cultivated and enlightened court became the centre of the letters and learning of Italy, and the abode of the best intellects of the time. Here, Italian reached a good degree of refinement and correctness, and received the name of the Aulic (court) or of the Sicilian language.

Poets have in all ages been the elevators and guardians of language; and we find Italian in the 12th and 13th c. honorably employed by the poets of the age, especially by those of Tuscany, whose own oral dialect soon took precedence over all the others in polished expression and grammatical accuracy. The chief Italian poets of this age are Guido Guincelli, Guido Ghisilieri, Fabrizio and Onesto of Bologna, Guido Lapo of Mantua; and the Tuscan poets Guittone d'Arezzo, Bonagiunta da Lucca, and Brunetto Latini Fiorentino, illustrious preceptor of Dante. Fra Guittone, member of the order of the Cavalieri Gaudenti, has left several compositions of merit, including sonnets and odes; but his most interesting literary legacy consists of 40 letters in prose, which are regarded as a valuable specimen of early Italian, being the most ancient epistolary composition in the language. The writings of these early poets possess more linguistic than poetic interest, and are found in various collections, chiefly in the *Rime Antiche* (1518), the *Poeti Antichi* by Alacci (1661), and the modern work of Rannucci, *Manuele della Letteratura del Primo Secolo* (Florence 1837, 3 vols.). Brunetto Latini

(1260), preceptor of Dante, was reputed 'a man of great sense and science.' His work, *Il Tesoro*, is a marvel of heterogeneous knowledge. *Il Tesoretto* is a curious compendium of moral precepts, and *Il Pataffio* a still more curious production, the obscene levity of which earned for him a place in the *Inferno* of his pupil. Guido Cavalcanti, cherished friend of Dante, was more philosopher than poet. Italian now began to be adopted as the vehicle of learned and scientific prose. The historical chronicles of Matteo Spinola, a Neapolitan, are the oldest specimen of Italian prose literature (1247–68); but the Florentine Malespini (died about 1280) is the first historical writer whose style is elevated and polished. In short, contemporary with the appearance of Dante (q.v.), the Italian dialect was rapidly superseding the Latin in grave prose composition, as well as in poetry, and soon became the recognized oral and written polite language of the entire country, while various local dialects were retained among the illiterate classes of the people. It has been finely observed that Dante found the Italian language in its cradle, and exalted it to a throne; his *Divina Commedia* imprinted on the Italian tongue a grave and majestic character, which at once qualified it to rank with the languages of Greece and Rome. The impetus imparted by Dante to the language and intellectual life of his country, has continued to the present day.

The minor poets, Francesco Stabile, or Cecco d'Ascoli, burned by the church (1327), and author of *L'Acerba*, a critical attack upon Dante, and a wonderful mixture of learning, acuteness, and superstition; Francesco da Barberino (1264–1348); and Cino da Pistoja, learned jurist and poet, whose work on jurisprudence, *Il Comento sul Codice*, and pleasing amatory verses, won for him the commendations both of Dante and Petrarch (1270–1336), claim mention before the great name Francesco Petrarca (q.v.) (1304–74), creator of Italian lyric poetry, and enricher and perfecter of its language. The lustre of Petrarch's fame, however, is not from his sonnets alone. Apart from their exquisite beauty and pathos, their classical elegance and simplicity of diction render them an abiding standard of Italian poetry. Italian, which, in its poetical capacities, we have seen created by Dante, polished and refined by Petrarch, was molded into a perfect form of prose first by the prince of novelists, Boccaccio (q.v.). The *Decamerone* is a series of tales, and Boccaccio's best known work. Boccaccio's style is deeply tinged by his culture of classical literature; and in his straining after the pompous majesty of Latin construction, he frequently exceeds the structural capabilities of his own language, which is naturally direct and simple in the order of its composition. Franco Sacchetti (1335–1400) of Florence, and Ser Giovanni Fiorentino (1348), also composed tales

distinguished by the excellence of his language; while Dino Compagni and Giovanni Villani enriched the historical literature of Italy with excellent chronicles, written in a spirit of fairness, and in great beauty of style.

The 14th century was lavishly productive of great original literary creations, the writers of that age, or *I Trecentisti*, according to their Tuscan appellation, being as distinguished for the sublime originality of their genius as those of the 15th c. were for abstruse erudition and philosophy. Italian was the chosen language of the *Trecentisti*, and in their writings attained a high refinement and purity. On the other hand, the scholastic writers of the 15th c. almost entirely excluded Italian from their works, substituting for the language of Dante and Petrarch a faulty form of Greek or Latin. To this may probably be attributed the languid development of literature during a period in which magnificent protection was afforded both by the pontifical and sovereign courts of Italy to the literature and art of the century, and when the discovery of printing imparted an impulse to the intellectual vitality of Christendom. Foremost among the encouragers of literature and art were the Medici at Florence; the Visconti, and, later, the Sforzas, at Milan; the houses of Gonzaga and Este at Mantua and Ferrara; the house of Aragon at Naples; and the Pontiff at Rome. Marsilio Ficino, Pico della Mirandola, Leon Battista Alberti, are some of the most distinguished writers who discarded their mother tongue and adopted Latin; while a host of grammarians, historians, philologists, and theologians openly pronounced the *illustrious* Italian language a vulgar dialect, unfit for philosophical or learned composition. But this debasement of literary taste was happily of brief duration, and to Lorenzo de' Medici, entitled the 'Father of Letters,' is due the literary revival of the Italian tongue. Under this princely patron of letters, arts and sciences, public libraries were founded or replenished, learned societies instituted, rich antiquarian treasures collected, universities opened, and a true standard of literary truth and beauty once more set up. His friend and protégé, Angelo Poliziano, wrote elegantly both in Italian and Latin, and composed the first regular dramatic work in the former language, under the title *L'Orfeo*. Toward the close of the 15th century and the opening of the 16th, a taste for the romantic and heroic in poetry began to show itself. This taste was cultivated by Durante da Gualdo, by Luigi Pulci (q.v.) in his *Morgante Maggiore*, and by the still more famous Matteo Boiardo (q.v.), whose *Orlando Innamorato* evidently suggested the greatest of all the works of this kind, the *Orlando Furioso* of Ariosto. But by far the most important historical works of the time were in Latin—e.g., those of Silvio Piccolomini, Marc Antonio Sabellicus

(died 1506), Bernardo Giustinianus (died 1489), and Georgius Stella (died 1480). During the century of scholastic erudition, the spring of Italian eloquence flowed with sluggish course until the impassioned and unstudied oratory of Jerome Savonarola (burned 1498) revived the traditions of ancient Rome, and reminded his hearers that Cicero too was an Italian.

The 15th century, though not marked by much creative genius in literature, unquestionably exercised immense influence on the Italian mind. The revival of letters, the invention of printing, the discovery of a new world, and the opening of a maritime channel to the wealth and traffic of the Indies, co-operated in that wonderful development of art and enterprise which the succeeding age exhibited; while the advancement of learning and science was promoted and systematized by the founding of numerous universities and literary institutions. Many of the magnificent typographical treasures with which the great public libraries of Italy abound, belong to this golden age, and are due to the artistic taste of Aldo Manuzio. See ALDINE EDITION; MANUZIO.

The 16th century is the Augustan age of Italian letters, art, and science. In a galaxy of splendid names, the brightest are Ariosto (q.v.), Tasso (q.v.), Macchiavelli (q.v.), Guicciardini (q.v.), Raphael (q.v.), Michel Angelo (q.v.), Palladio, and Vignola. Pope Leo X. and his successors vied with the other sovereigns of Italy in munificent patronage of those men of genius, who, under the title of Cinquecentisti, are considered models of pure and noble Italian composition. The *Orlando Furioso* of Ariosto, held to be the first genuine epic of chivalry and romance, celebrates the deeds of the legendary ancestors of the house of Este. It exerciesd immense influence, even among the most illiterate, by whom its choicest beauties were committed to memory to be sung as the solace of labor in the field or city. The next great work of the century was *La Gerusalemme Liberata*, by Torquato Tasso (q.v.), whose father also was an excellent poet and scholar. Tasso's prose writings and epistles are noble in style and grave and philosophical in matter (1544–95). Their best imitators are L'Alamanni, *Il Giron Cortese* and *L'Avarchide;* Rucellai; and Erasmo da Valvasone, in his *La Caccia* and *L'Angeleida* (or The Wars of the Angels), from which Milton probably borrowed valuable hints (1593). Giangiorgio Trissino wrote the first notable Italian drama, *Sofonisba.* Besides this the *Tullia* of Ludovico Martelli, the *Canace* of Sperone Speroni (1500–88), the *Torrismondo* of Tasso, and the *Edipo* of Andrea dell' Anguillara, deserve mention—the last is considered the best Italian tragedy of the time. The comedies of Bentivoglio, Salviati, Cecchi, Firenzuola, and others, are stamped with that prevailing licentiousness which disfigures many of the finest productions of the age. The

popular dramatic pieces, or *Commedie dell' Arte,* had as high repute among the lower classes as the higher drama did in courtly and patrician circles. Some of the chief composers of these pantomimic comedies are Flaminio Scala, Angelo Beolco, Andrea Colmo. The writers of pastoral dramas inundate this epoch, but none can compete with Guarini (q.v.) in his sweet idyllic work, *Il Pastor Fido.* Poetry was combined first during this century with music—one of the earliest operatic compositions being the *Dafne* of Rinuccini (died 1621). The sonnets of Michael Angelo excel in dignity and originality of thought. Vittoria Colonna, celebrated in the verse of Ariosto, was the most illustrious poetess of her time; which produced numerous other female writers, whose works have been collected and published by Domenichi.

Foremost among the prose writers stands Macchiavelli; his *Arte della Guerra* (Art of War), *Istorie Fiorentine* (History of Florence), and political treatise, *Il Principe* (The Prince), all excel in their various styles. Giovanni Botero, Giannotti, and Paruta, also are political writers of high merit. Greater than either is Francesco Guicciardini, whose *History of Italy* has only one blemish, viz., lack of brevity. The works of Bembo (q.v.), historian and poet, exhibit the Italian language subjected to a regular grammatical system. Literature was historically treated by Barbieri and Doni; art, by Vasari, Campi, and Lomazzi; architecture, by Vignola and Palladio.

The progress of the age is perceptible equally in philosophy, which, bursting the fetters of scholastic formalism, displays the utmost freedom of speculation in the works of Cardan (q.v.), Bruno (q.v.), and Vanini. Many celebrated institutions or academies for the discussion and diffusion of knowledge date from the 16th c.—one of the most noted being the academy Della Crusca, founded at Florence for the preservation and perfecting of the Italian language.

The 17th century, less prolific in great literary names than its predecessor, is nevertheless the golden age of Italian science; it produced a host of illustrious discoverers in philosophy, mathematics and physic. Such was the fame of Italian science at this period, that the universities of Florence, Naples, Pisa, and Venice were thronged with foreign students. Learned societies for the cultivation and practical demonstration of the physical sciences were opened throughout Italy (see ACADEMY). Libraries were collected and enriched, to afford every facility to learned research. The most celebrated savants are the world-famous Galileo (see Galilei), Torricelli (q.v.), Borelli, the astronomer Cassini (q.v.), and Viviani, pupil and biographer of Galileo; Malpighi and Bellini, anatomists and physicians. Contemporary with these, we find Gian Vincenzo Gravina,

whose lectures on civil law attracted audiences from all Europe. In historical composition the best known works are Sarpi's famous *History of the Council of Trent;* its equally famous refutation by Pallavicino; *The History of the Wars of the Netherlands,* by Bentivoglio; and of *The Civil Wars of France,* by Davila (q.v.). A few of the great names of literature are—Bianchi, acute thinker on political and social science; Monte-Cucculi, author of the *Aphorisms of the Art of War,* written with Spartan brevity of style; Bartoli, Jesuit historian; and Segneri, Jesuit orator.

The poets of the 17th century, at least Marini (q.v.) and his school, show a degenerate taste. Fondness for trivial conceits, false glitter, and artificiality, are their characteristics, but several of his contemporaries—Chiabrera, Guidi, Tassoni, author of the admirable mock-heroic poem, *La Secchia Rapita* (The Stolen Pail), Filicaja (q.v.), and others, have written with grave energy of style and warmth of sentiment. The theatrical and operatic representations at the varions sovereign courts were of exceeding splendor, as if in compensation for the paucity of dramatic compositions.

In the 18th century, a vigorous revival of poetry and letters took place. Giannone, in history; Capasso, in literature; Cirillo, in physic; Mazzochi, in archeology; Il Genovesi, in political economy; the brothers Galiani, in their respective sciences of architecture, political economy and philology; Filangieri (q.v.) and Beccaria (q.v.) in the philosophy of jurisprudence; Mario Pagano, in the science of civil law; Poli (1746–1825), Volta (1745–1826), Galvani (1737–98), Scarpa (1748–1832), and Spallanzani (1729–99), in physical science; Maffei and Calsabigi, in poetry, are some of the names by which this period was ennobled. The 18th c. can boast also of the greatest names in Italian dramatic literature Metastasio (q.v.) (1698–1782) considered the master of the pastoral drama; flowing, sweet, and silvery, the language of his gentle muse presents a strange contrast to the brevity, sternness, and classical plainness of Italy's greatest tragedian, Vittorio Alfieri (q.v.) (1749–1803), by whom a thorough revolution was effected in the drama of his country. A no less marked reformer of comedy is his contemporary, Carlo Goldoni (q.v.) (1707-93).

During the 19th and the early 20th centuries the genius of Italy has revived in science and literature. By the best writers of the day, a sound Italian style, untainted either by Gallicisms or by the false glitter of the *Seicentisti* school, has been adopted.

The early part of the 19th century rivals the age of Leo X., presenting Canova, Longhi, Cicognara, Appiani, and Beltrami in the fine arts; Monti, Foscolo, Pindemonte, (partially contemporary with whom was Alfieri) in literature; and Volta, Melchiore Gioja, Romagnosi,

Scarpa, Spallanzani, and Oriani in the sciences. The author who doubtless exerted the greatest influence on the regeneration of poetry was Vincenzo Monti (1754–1828), who in the contest between the classic and the romantic tendencies favored the former, and in the contest between the Gallicists, or imitators of the French Literature and idioms, and the Purists, who made Petrarch, Dante, and the other old Italian masters their models, sided with the latter. His poems, as *Basvilliana* and *Feroniade*, his tragedies, as *Galeotto Manfredi*, his elegy *Mascheroniana*, the *Proposta*, in which he disputed the restrictions which the Della Cruscans had fastened upon the language, and his translation of the *Iliad* alike display an admirable and nervous style. Pindemonte also made a light and graceful version of the *Odyssey*, and in his original poems especially lamented the desolation of his country. Ugo Foscolo (1777–1827) belongs to the school of Alfieri. His *Ultime lettere di Jacopo Ortis*, a political and passionate romance in imitation of Goethe's *Werther* is supposed to describe his own troubled life. He wrote the lyric *I sepoleri*, and other works in prose and verse, remarkable both for power and beauty. Mezzanotte celebrated in verse the struggle of the modern Greeks for liberty. The lyrical poems of Leopardi are highly esteemed. Among the epic and didactic poets were Botta, Ricci, Bagnoli, Arici, Grossi, Sestini, Pananti, and Lorenzi. Antonio Cesari (d. 1828) was the chief of the Trecentists, a school which carried its love of the Italian authors of the 14th century to affectation. Stratico published a dictionary containing only the words used by the Marinist authors. Mameli had exhibited the greatest promise in his ode to Venice, before he fell in the conflict at Rome in 1848–9. Prati, Aleardi, and the versatile priest, dramatist and journalist, Dall' Ongaro, were among the best lyric poets of Italy of the last half-century, and among contemporary lyric poets are Graf and Ada Negri. For the revival of pure and unaffected writing Italy was much indebted to the example of Carlo Botta, called by his countrymen the modern Thucydides. He wrote histories of the war of American independence and of Italy during the last three centuries. Vacani was a historian of the Peninsular war. Pietro Colletta wrote the history of Naples from its conquest by Charles III. of Spain in 1734. Amari wrote the history of the Arabs in Sicily and of the Sicilian Vespers, illustrating obscure periods in an age of national glory. Both were reflective or philosophical historians. Cesare Cantu (1804–95) wrote an immense universal history, a work of critical and artistic merit, which has been translated into several languages. He also wrote novels, poems, critical essays, and other histories, one of the most important of which is *La Storia di cento anni* (1851). Bianchi Giovini, a prominent and anti-Catholic journalist, wrote a his-

tory of the popes, a biography of Fra Paolo Sarpi, a history of the Hebrews, and a work on the supposititious Pope Joan. The political writings of Mazzini consist chiefly of articles in journals. Cesare Balbo wrote historical meditations, a life of Dante, and a summary of the history of Italy. Franscini wrote an accurate and authoritative statistical work on Switzerland (1847–51). La Farina (1815–63) was the author of a history of Italy from the most ancient to recent times; Federico Sclopis, (1798–1878), of a history of Italian legislation (completed in 1857); Luigi Zeni, of an excellent compendium of Italian history; Romanin, of a learned history of Venice, written in opposition to that of Daru, and of a work on the Venetian inquisitors; Carlo Gemelli, of a history of the Belgian revolution of 1830; Giuseppe Rubini, of a history of Russia from 862 to 1725; Canette, of a history of Amadeus II. of Savoy; Canale, of a history of the Crimean war of 1854–5; Gallenga, of a history of Piedmont; Angelo Brofferio, of a history of Piedmont from 1814 to 1849, and of other works interesting from their patriotic spirit as well as literary merit; Anelli, of a history of Italy from 1814 to 1850; Carlo Catteneo, of a history of the insurrection at Milan in 1848 (he was a member of the committee that directed the operations against the Austrian militia, and a participant in the struggle); he also compiled the *Archivio triennale*, an elaborate and most careful and valuable collection of authentic documents relative to the events that occurred in Italy from 1848 to 1850; Federico Torre, of a history of the French expedition to Rome in 1849; Ferrari, in a work on republican federation, treated the question under what form of government Italy ought to be reorganized; L. C. Farini (1812–66) wrote a history of the Papal States from 1814 to 1850; Gualterio, of the last Italian revolutions (1852); Vecchio, of the events in Italy in 1848–9; among more recent historians were Giudici (1812–72), Settembrini (1813–76), and De Sanctis (1818–83). A taste for illustrating the national antiquities also arose and Inghirami published *Monumenti Etruschi*, Delfico his *Origini Italiche*, Fanucci his *Storia dei Veneziani, Genovesi e Pisani*, Manno his *Storia di Sardegna*, Bres *Malta illustrata*, and Pompeo Litta his learned *Famiglie celebri d'Italia*, containing interesting studies on every period of the national history. Visconti (1751–1818) was distinguished in classical archæology, and Sestini was unrivaled in numismatics, making medals illustrate geographical questions. The natural sciences were advanced by four illustrious savants, who were nearly contemporary, Volta, Galvani, Scarpa, and Spallanzani. The discussions of Galvani and Volta concerning their new discoveries in electricity divided the scientific men of Europe into two factions, and the poets followed their example. Scarpa, a learned disciple of Morgagni, re-

duced anatomy to a positive science. Spallanzani wrote on physics and physiology in a style worthy of one who declared philosophy itself imperfect unless its principles were elegantly expressed. Gioja and Romagnosi treated philosophical questions and the economical and political sciences, the *Filosofia della statistica* being the principal work of the former, and the *Genesi del diritto penale* of the latter. Manzoni produced new models of lyric verse, and examples of historical dramas and novels in his *Adelchi, Il conte di Carmagnola,* and *I promessi sposi.* To the modified classical school of Monti belong the dramas of Silvio Pellico, chiefly known by his *Franceseo da Rimini* and *Le mie prigioni,* and those of Nicolini, often founded on the history of his country, and strongly marked by patriotic feeling. *I promessi sposi* of Manzoni (1825) was succeeded by the *Monaca di Monza, Luisa Strozzi,* and *Il conte Ugolino della Gerardesca* of Rosini; the *Margherita Pusterla* of Cesare Cantu; the *Marco Visconti* of Grossi; the *Ettore Fieramosca* of Azeglio; and the *Battaglia di Benevento, Assedio di Firenze, Isabella Orsini,* and *Beatrice Cenci* of Guerrazzi. The romance entitled *Famiglia* (1850), by Bersezio, is one of the best late Italian novels. The *Dr. Antonio* of Ruffini is esteemed for its pictures of Italian scenery. Accomplished women have taken a considerable part in recent Italian literature. The *Morte di Adone* of Teresa Bandellini was followed by the learned philosophical and religious poems of Diodata Saluzzo, with which she intermingled slight lyrical pieces. Cecilia de Luna Folliero wrote on the education of girls and the moral influence of music. Giustina Rinier Michiel celebrated in song the festive days and commemorated events of Venice. Isabella Teotochi Albrizzi wrote a graceful and truthful biography of Canova. The work of the Signora Ferucci on the education of girls received the encomiums of Gioberti and other distinguished thinkers. Other female authors are Lucrezia Marinella, Sabina Rasori, Silvia Curtoni Verza, Costanza Moscheni, and Leonora Fonseca Pimentel. In philosophy, the names of Gioja and Romagnosi were succeeded by that of Pasquale Borelli (Lallebasche), the author of an introduction to philosophy, and of works on the nature and genesis of thought, in which he opposed the empiricism of Romagnosi. Pasquale Galuppi (1770–1846), in elaborate works, combated the philosophical tendencies of the 18th century by doctrines founded on the philosophy of the Fathers of the Church. He was a student of the German philosophers, and one of his most interesting works was on the changes of modern philosophy from Descartes to Kant. Mamiani (1799–1885) published his *Rinnovamento dell' antica filosofia Italiana* with the design of restoring the philosophical method of the Church Fathers, which he regarded as the national philosophy of the Italians, and of reconciling the extreme

conclusions of speculative philosophy with the dictates of common sense. Rosmini (1787–1855) and Gioberti 1801–52) developed ideal Catholic theories, and founded a school in which, according to Rosmini, the only necessary and innate idea is that of the possibility of being. Gioberti, a more brilliant and learned author, denounced psychology, and made the formula *L'ente erea le esistenze* the ontological basis of philosophy. Among contemporary literary celebrities are D'Annunzio (1864– ), poet, dramatist and novelist; Carducci (1836–1907, Jan. 15), and Rapisard, poets and critics; Cossa (1834–81), Farrari (1822–89), Giacometti (1816–82), Pulle ('Castelnuovo'), dramatists; De Amicis (1846– ), Barrili, E. Castelnuovo (1839– ), Farina (1846– ), Matilde Serao (1856– ) and Verga (1840– ) novelists. Among modern scientific authors and critics are D'Ancona (1835– ), Ascoli (1829– ), Comparetti (1835– ), De Gubernatis (1840– ), Lombroso (1836– ), Rajna (1847– ), and Villari (1827– ). Giovanni Verga (1840– ) and Luigi Capuana (1839– ) were the first champions of the realistic Italian novel. Verga's representations of simple semi-civilized Sicily are truly Italian. De Roberto, a follower of Verga, has traced an historic picture of Sicilian life. Matilde Serao (1856– ), after attempting the sentimental novel and the Zolian methods of observation, has successfully blended these two fictional elements in *Suor Giovanna della Croee.* Enrico Butti has given remarkable studies of the modern conscience. Antonio Fogazzaro's (1842– ) novels are an honor to Italy, they unite realistic observation and spiritual insight. Gerolamo Rovetta faithfully represents a society lacking in noble ideals; his characters are as often sordid as wicked. Salvatore Farina (1846– ) is optimistic, Grazia Deledda feelingly describes her own Sardinia, and de Amicis (1846– ) presents familiar scenes of soldier life and street car episodes.

In the beginning of the 20th century Gabriele D'Annunzio occupies the first position among Italian writers. He is the most widely read and the most imitated, and he has made incursions into almost every form of literary composition. *Piaeere* is a prose poem to the goddess Aphrodite. *Il Trionfo della Mortè* is D'Annunzio's greatest novel. The most complete histories of Italian literature are Crescimbeni, *Storia della Volgar Poesia,* 6 vols. (Rome 1698; Venice 1731); Quadrio, *Storia e Regione d'ogni Poesia,* 7 vols. (Bologna 1739); Tiraboschi, *Storia della Letteratura Italiana,* 14 vols. (Modena 1772–83; 16 vols. 1787–94; 12 vols. Rome 1785; 16 vols. Milan 1822–26); Corniani, *Seeoli della Letteratura Italiana,* 9 vols. (Brescia 1818—19), Maffei, *Storia della Letteratura Italiana* (2d ed. 1834); Giudici (1847); De Sanctis (1871); and *Storia letteraria d'Italia seritta da una soeietà di amici* (Milan 1870–77).

See also Garnett's *Italian Lit.* (1895); Kennard's *Ital. Romance Writers* (1906). For special periods consult Symond's *Introduction to Dante* (1890); Dean Church *Dante* (1878); Kennard's *The Fallen God* (1901); Scartazzini, *Companion to Dante* (trans. 1895); J. Ferrazzi, *Manuale dantesco* (1871–77); G. Biagi and G. L. Passerini, *Codice diplomatico dantesco* (1895–1903); *La vita ital. del Rinascimento* (1893); A. Gaspary, *Storia d. lett. ital.* p. 307 (1900); P. Villari, *N. Machiavelli e i suoi tempi* (Milan 1895–97), translated into English; A. Agresti, *Studi Sulla commedia ital. del. sec. XVI.* (1871); G. A. Venturi, in *Giorn. stor. XI.* (p. 432 et. seq.); A. Albertozzi, *Romanzieri e romanzi;* A. Lombardi, *Storia d. lett. ital. nel sec. XVIII.;* G. Zonolla, *I costomi del sec. XVIII. e la poesia del Parini;* Kennard, *Ital. Romance Writers* (Introduction); L. Vicchi, *Le lettre e la politica in Italia dcl* 1750 *al* 1830; G. Mazzoni, *Le origini del Romantismo* (1893); B. Croce, *La critica letteraria* (Rome, 1897); A. Flamini, *La litt. ital. de* 1868–1898 (French).

IT'ALY, Free Church in: organized, Milan, 1870, by Alessandro Gavazzi (q.v.) with 23 congregations and 400 communicants. It is the outgrowth of the efforts of Gavazzi to evangelize his countrymen, after his conversion to Protestantism, under the guarantees of the decree of religious liberty of 1848. His early labors were independent of, but in harmony with, the church of the Waldensians, which had 15 congregations in the mountain regions and one in Turin, 1848; and their consummation was retarded many years by the political disturbances in Italy and the active part that Gavazzi took in them. In the organization of the Free Church, the general assembly feature of the Presb. Church and the independent position of each local church in its own affairs as observed in the Congl. churches were adopted. Since its organization, the church has grown steadily and exerted influence for good. By the last census it had 30 congregations, 14 ministers, 1831 communicants, a theol. seminary in Rome with 4 professors and 10 students, and churches in Rome, Milan, Turin, Bologna, Naples, Venice, Florence, and other cities and large towns. The Free Church has received substantial aid from Christians in England, Scotland, and the United States.

ITASCA, *ī-tăs'ka*, Lake: small and picturesque body of water in northern Minn., lat. 47° 10′ n., 1,575 ft. above the sea; the farthest source of the Mississippi river. See Glazier, Lake. It is an extremely irregular body of water occupying a glacier-made bowl-shaped depression, surrounded by heights covered with dense forests, interspersed on the slopes with streams, springs, and small lakes often with no apparent outlet. The ground has a substratum of sand and gravel, mingled with large boulders; the surface is spongy and swampy.

This basin has been made a national park of about 7 by 5 miles, containing 19,701.69 acres (30.78 square miles). In the centre, fed by sources so permanent and with a flood plain so small that it has actually risen in dry seasons (though it receded some feet during the 19th century), lies Itasca, a giant among the small ponds around it, but having an area of only 1,130 acres, or 1¾ square miles. It is composed of a centre running east and west about a mile, whence extend north and south an east and a west arm about 1½ miles long each, and another northward about a mile, the width varying from ⅛ to ¾ of a mile. It has a shore line of 23,000 yards (over 13 miles). Depth 4 to 50 and 60 feet; average, 20 to 35. The Mississippi flows from its north arm; a strong brook called by Nicollet the 'Infant Mississippi' flows into the west arm. See MISSISSIPPI RIVER.

ITA'TA CASE, 1891, an important international imbroglio, resulting from the *coup d'état* of Balmaceda and the revolt of the constitutional party in Chile. The latter through an agent had bought a quantity of arms and ammunition in New York, which were shipped to San Francisco and then sent by a schooner to the southern coast, where it was met by the insurgents' vessel, the Itata, and the cargo transferred. The vessel had a few soldiers and a little artillery on board. The attorney-general issued a writ of detention on the ground that she was violating our neutrality laws; and this failing, our cruiser Charleston was sent in pursuit, overhauled and captured her, and placed her on trial before the United States district court at San Diego. The courts discharged her as not having been guilty of such violation. The real interest of the case was political. It was notorious that our government and many of its civil and naval representatives sympathized with Balmaceda against the insurgents, and it was charged with going out of its way in order to cripple the latter; while the other party were ready to make war on the Chilean constitutionalists for defying our authority.

ITCH, n. *ĭch* [AS. *gictha*, an itching, scab: Dut. *jeuken;* Ger. *jücken*, to itch: Bav. *gigkeln*, to shiver, to twitch]: a disease of the skin which inclines the person to scratch the part; any strong teasing desire or longing: V. to feel on the skin the peculiar uneasy sensation arising from itch, causing a desire to scratch the skin; to have a teasing or longing desire for. ITCH'ING, imp.: ADJ. having a sensation and desire for scratching; having a constant longing desire: N. a state of the skin which creates the desire for rubbing or scratching; a constant teasing desire. ITCHED, pp. *ĭcht*. ITCHY, a. *ĭch'ĭ*, infected with the itch; having feeling as if arising from the itch. ITCH'INESS, n. state of being itchy. ITCH'INGLY, ad. *-lĭ*.

ITCH (known also as SCABIES and PSORA): contagious vesicular disease of the skin. All parts of the body, unless perhaps the head, are liable to be affected, but the most common seats of the disease are the wrists and hands, and especially between the fingers. The first sign of this affection is an itching sensation, which, on minute examination, is found to proceed from a minute conical vesicle, while the adjacent portions of epidermis present a more scaly appearance than is natural. This condition of the skin is due to the presence of a minute acarus, the ITCH-MITE, which burrows within the epidermis, and excites the cutaneous irritation. The affected parts itch with increased intensity when the patient is warm in bed, or after the use of stimulating drinks or condiments; and as he cannot refrain from scratching himself, the vesicles become more or less broken and interspersed with numerous little bloody points.

Eczema, prurigo, and lichen, are the affections most likely to be confounded with itch; but eczema, though a vesicular disease, presents rounded and not conical vesicles, and at most only a pricking sensation, and nothing like the irritation of itch, while prurigo and lichen are papular disorders, and are not accompanied by vesicles.

Itch is always communicated by contact, either immediately, as by the act of shaking hands, or through the medium of articles of clothing or bedding which have been used by a person suffering from the disorder.

The disease, if not cured, will continue for an indefinite period, but in cold and temperate climates, it never causes serious injury to the health. Numerous external remedies have been employed, but the great remedy is sulphur, which may be regarded as a specific. Sulphur ointment should be well rubbed into the entire skin before the fire, and particularly into the affected portions, morning and evening, for two days.

When patients strongly object to the smell of sulphur, an ointment made by digesting over a vapor-bath, for 24 hours, three parts of stavesacre in powder, with five parts of lard, and then straining, may be used.

COOLIE ITCH or ground itch is an itching affection of the skin of the feet and legs in certain tropical regions. It is accompanied or followed by the constitutional signs of profound anemia, and investigation has shown that the disease is in reality a form of ankylostomiasis, the local itching being caused by the entrance of the parasite through the skin of the feet and legs.

DHOBIE ITCH is a form of ringworm, of the axillæ and groins chiefly, occurring in the tropics; it is especially common in the Philippines.

ITCH INSECTS. See PARASITES, EXTERNAL.

ITCH-MITE (*Acarus scabiei* or *Sarcoptes scabiei*): minute acarus, supposed by some naturalists to be

referred to by Aristotle in the 5th book of *Historia Animalium*, cap. 31. But though the itch was undoubtedly known to the Greeks and Romans, there is no certain evidence that a mite was recognized as the cause earlier than by Avenzoar, Arabian physician in the 12th c. Throughout the middle ages, and till the 19th c. the necessary connection between the disease and the mite was universally recognized, as is obvious from the writings of Scaliger (1557) and others; and a paper read by Adams before the Royal Soc., 1805, contains two good figures of the mite. During the first ten years of this century, many practitioners, not succeeding in finding the animal, expressed doubts concerning its existence, and in 1812 there occurred a remarkable incident in the history of this mite. M. Gales, chief apothecary to the Hospital of St. Louis, tempted by a prize offered by one of the unbelievers, published in that year a treatise on the itch, in which he declared that he had seen more than 300 of the mites, and in which he gave a drawing of the animal, which, though it differed materially from the delineations of earlier observers, was at once accepted as an exact representation of the true parasite, and was copied for several years into all works treating the itch, until Raspail discovered that Gales's Memoir was a tissue of deceptions, and that the animal which he had figured was the *cheese-mite*! The existence of the itch-mite was now more distrusted than ever, until 1834, Renucci, Corsican student, demonstrated the presence of the creature. Many points regarding the structure and habits of this curious animal have been since revealed by the investigations of Gras. Raspail, Hebra, Gudden, and especially De la Foad and Bourguignon, who presented to the French Institute *A Practical Treatise on the Entomology and Comparative Pathology of the Itch as it occurs in Man and the Domestic Animals*, published in *Mémoirs présentés par divers Savants à l'Académic des Sciences*, vol. for 1862.

The adult female mite is considerably larger than the male; it is visible to the naked eye, and forms a roundish grayish-white corpuscle, not unlike a starch granule; it is about $\frac{1}{5}$ of a line in length, and $\frac{1}{7}$ in breadth. Seen under the microscope, it presents a truncated tortoise-like shape, and is seen to be studded with hairs and bristles. The head terminates in two pairs of mandibles.

In order to penetrate the horny layer of the epidermis, the mite assumes, according to Gudden, a nearly perpendicular position; and to avoid as much trouble as possible, it usually selects such spots as give least resistance, such as the space between the fingers, the inside of the wrist, etc. Once fairly buried, it does not again come out, but burrows, and forms tortuous galleries within the skin. These galleries resemble the mark

which is formed when a pen is drawn lightly over the skin without causing a scratch. In young children, and in persons with a delicate skin, they appear of grayish-white color; while in persons with a coarse dirty skin they are blackish. At certain intervals, the galleries are pierced by small openings, for the admission of air; it is through these openings, which sometimes appear like very minute black dots, that the young escape. The vesicles characteristic of the itch disease are attributed to a poison ejected by the mite. The males are smaller and much scarcer than the females.

There are numerous species of itch-mite (*Sarcoptes*) which infest the lower animals. One of them (*S. canis*), produces *Mange* (q.v.) in dogs; another (*S. equi*), a comparatively large species, sometimes occurs in horses; another (*S. bovis*) in oxen in parts of Europe; another (*S. ovis*) in sheep. Some of these are occasionally transferred to human beings, and cause irritation and annoyance, which, however, seems limited to the life of the individual mites transferred, the situation not being congenial for their increase.

ITEM, n. *ī'tĕm* [L. *ĭtĕm*, also, in like manner: Skr. *ittham*, so]: a separate article or particular: AD. also; furthermore—used when something is to be added.

ITERATE, v. *ĭt'ĕr-āt* [L. *ĭtĕrātŭs*, gone over again, repeated—from *ĭtĕrŭm*, again, a second time; to repeat. IT'ERATING, imp. IT'ERATED, pp. IT'ERA'TION, n. *-ā'shŭn*, repetition. IT'ERATIVE, a. *-tĭv*, repeating.

ITHACA, *ĭth'a-ka*, (vulgarly THIAKI, *thē-â'kē*): one of the Ionian Islands (q.v.), and the smallest except Paro; 17 m. w. of the mainland of Greece, 2 m. n. of Cephalonia. The surface is mountainous, but there are many pleasant valleys. Length, 15 m.; breadth, 4; about 40 sq. m. It was celebrated among the ancients as the principality and home of Ulysses. The cap. is Vathi. Pop. 12,000.

ITHACA, *ĭth'a-kâ*, New York: city, capital of Tompkins co., on Cayuga Lake, and the Lackawanna and Lehigh Valley railroads; 70 m. s.e. of Rochester. It was first settled in 1787, and was called at various periods, 'Sodom,' 'The Flats,' and 'The City,' until 1806, when Simeon Dewitt gave it the name it has since borne. The city derives power from Fall Creek, and it has manufactures of typewriters, drop forgings, firearms, calendar clocks, iron castings, agricultural implements, machinery, salt, wall paper, glass, autophones, etc. It is best known as the seat of Cornell Univ. (q.v.) and the Cascadilla Preparatory School; also as a popular summer resort. In the immediate vicinity are numerous gorges and waterfalls, the most noted of the latter being Triphammer, Ithaca, Buttermilk, and Taughhannock, the latter being the highest fall east of the rocky mountains, its height measuring 215 feet. The city is handsomely built on

both sides of Cayuga inlet, and commands an extensive view of picturesque scenery. It has trolley connections with East Ithaca, and does a large farming trade not only in Tompkins, but the surrounding counties as well. There are two national banks, the Ithaca Conservatory of Music, and the Cornell Free Library of 21,000 volumes. The city is lighted by gas and electricity, and has a fine system of waterworks and electric street car lines. Under the charter of 1888, the government is vested in a mayor and city council elected every two years. Pop. (1910) 14,802.

ITINERANT, a. *ī-tĭn'ėr-ănt* [mid. L. *itĭnĕrans*, or *itĭnĕran'tĕm*, making a journey—from L. *ĭtĕr*, a way or journey, or *itĭnĕrĭs*, of a journey: It. *itinere*, a journey]: passing from place to place; wandering; unsettled: N. one who travels from place to place, or is unsettled; a pedler. ITIN'ERANTLY, ad. *-lĭ*. ITIN'ERACY, n. *-ă-sĭ*, or ITIN'ERANCY, n. *-ăn-sĭ*, a passing from place to place; in *eccles.* usage (see METHODISM, ETC.). ITIN'ERARY, n. *-er-ă-rĭ* [F. *itinéraire*]: guide or route-book for travellers (see below): ADJ. pertaining to or done on a journey. ITIN'ERATE, v. *-er-āt* [mid. L. *itĭnĕrātus*, having made a journey]: to travel from place to place, particularly for purpose of preaching. ITIN'ERATING, imp. travelling from place to place, particularly for preaching or lecturing. ITIN'ERATED, pp.

ITIN'ERARY, or ITINERARIUM: schedule of a route; road-book, or table of the stages between two places of importance, with the distances from one to another. The itineraries of the ancients contribute much to our acquaintance with ancient geography. Of these, the most important are *Itineraria Antonini* and *Itinerarium Hierosolymitanum*. The *Itineraria Antonini* are two in number, the *Itinerarium provinciarum* and the *Itinerarium marinum*, the former containing the routes through the Roman provinces in Europe, Asia, and Africa; and the latter the principal routes of navigators, who then sailed only along the coasts. They take their name from Antoninus Caracalla, by whom they were published, as corrected up to his time, but they seem to have been originally prepared at an earlier date.—The *Itinerarium Hierosolymitanum* was drawn up A.D. 333, for the use of pilgrims from Burdigala (Bordeaux) to Jerusalem. Of these itineraries, various editions have been published.

ITINERATING LIBRARIES: small collections of books for popular reading contained in boxes, one of which, after being stationed in a village for a time, is transferred to another village, when another library may take its place; and so on with any assigned number of boxes, each with its special assortment. The principle of shifting about boxes of books in this way in rural districts is referred to in the memoirs of Oberlin (q.v.), and has

been long known in Wales and in the Scotch Highlands; but it met no significant approval, until it was improved upon and carried into effect on a broad scale by Samuel Brown, merchant in Haddington, Scotland (died 1839), who, taking a deep interest in popular instruction, set in circulation itinerating libraries in several small villages of East Lothian, 1817. The books were assorted to the extent of 50 vols. in a box. At first, there were four boxes; and as the time allowed for each was two years at a village, the inhabitants of four villages had the perusal of 200 vols. in eight years, at one-fourth the expense of the whole. The undertaking was begun and locally superintended from motives of benevolence, and the books were supplied gratuitously. The success attending this economic method of establishing libraries in a country district, led to its extension over a wider sphere, on the principle of readers paying a small sum per annum, also of forming the assortments of books from the new works that had been used in a central subscription library. There were lately several itinerating divisions in use in various parts of Scotland, as also in England, and 12 divisions were some time ago transmitted to Jamaica, where they were to be under the charge of missionaries. This simple expedient has been found a valuable auxiliary to schools, churches, and other agencies of social improvement. See *Itinerating Libraries and their Founder* (1856); and a paper by Maclauchlan, read at the Librarians' Conference 1880.

-ITIS, suf. *-i-tis* [L. *-itis;* Gr. *-itis*]; in *path.*, inflammation, as, hepatitis, inflammation of the liver; pericarditis, inflammation of the pericardium.

ITO, Hirobumi, *hē-ro-boo'mē ē'tō*, Marquis, Japanese statesman: b. in Choshiu province, 1841. His father was a samurai retainer of the daimio of Choshiu, with whom the youth became a trusted agent in his opposition to the shogunate. While at Yedo in the interests of his chief, Ito became acquainted with western methods of warfare, consequent on the visit of Commodore Perry in 1854, and determining to study these in their native countries, with four comrades, including Inouye (q.v.), left Japan secretly, and eventually arrived in London. Diplomatic complications arising, owing to his daimio ignoring the right conferred by the Shogun on European powers to navigate the Inland Sea, Ito hastened home before two years had elapsed, but was unsuccessful in his efforts to persuade the daimio of Choshiu from opposing the European fleets assembled at Shimonoseki. The daimio defeated, Japan awakened to the power of the West, and Ito became the impelling factor in its reorganization on models more in accord with the leading powers of the world. He took an active part in the overthrow of the shogunate and the restoration of the imperial power in the person of the Kotei or Mikado; in 1868 was appointed governor of Hiogo, and in 1869 vice-minister of

finance. He then became prominent as an advocate of uniform coinage. In this connection he visited the U. S. and after studying the financial system of that country returned to Japan with the recommendation that the decimal system of money be adopted, which was done, and a mint established at Asaka. In 1872–3 he made a tour of the world, as a member of Iwakura's embassy, for the purpose of revising the treaties then in force. He became (1872) minister of public works and established a college of engineering and secured the building of the railway from Yokohama to Tokyo. In 1876 he again visited Europe to study the constitutions of the various countries for the purpose of remodelling that of Japan. On his return he inaugurated a radical plan for changing social customs. Having become minister president of state he started these reforms in the government offices, eliminating men of the old schools and substituting men of modern training and thought. He also reconstructed the laws and codes according to the ideas of western countries and carried out many reforms in economy. In 1882 the Emperor, desirous of adopting the constitutional form of government, commissioned Ito to proceed to Europe and America in order to investigate the governmental systems of the two continents. While in Europe he attended the coronation ceremony of the Tsar Alexander III., as a representative of Japan, and returning in the following year, he began the work of drafting the constitution of the empire. One year later Ito was appointed minister of the imperial household and created count. In 1885 he was despatched to China and concluded the Tientsin Treaty with the late Li Hung-Chang; became prime minister in the same year, but in 1888, when the privy council was created, resigned the premiership and was made president of the council. The constitution, the result of his exhaustive investigation, was proclaimed in 1889, and when the imperial diet was first convened, Count Ito was appointed president of the house of peers. During his second premiership war broke out with China, and it was he who negotiated peace and concluded the Shimonoseki Treaty. In recognition of services during this war Count Ito was created Marquis in 1895. In 1896 he resigned the premiership only to form his third cabinet in 1898. Soon afterwards, however, at his own request the Emperor relieved him from office, and he recommended to the sovereign the leaders of the two political parties then becoming prominent in the political life of the country. His advice was acted upon and these leaders formed a party cabinet, but soon quarrelled, and the first party cabinet in the history of Japan ended in failure. Ito then organized a political party, the Constitutionalists, but this action evoked strong opposition from the conservative section. When he formed his fourth cabinet, Marquis Ito met with firm opposition from the house of peers the members of which

are mostly conservative in view. His Premiership was short-lived; he resigned and in order to improve his health visited Europe and America. Subsequently he severed connection with the party of his own creation and was appointed president of the Privy Council.

During the war with Russia Marquis Ito as one of the 'Elder Statesmen' was the most trusted counsellor of the Emperor. After the conclusion of peace he was twice dispatched to Korea, these visits resulting in the Japan-Korea Treaty, declaring the Japanese protectorate over the peninsula. The Marquis was ultimately appointed Resident-General of Korea, which high office he now (1908) holds.

In 1902 Marquis Ito was elected LL.D. of Yale University and has received many honours both from his sovereign and the heads of foreign nations, including the Grand Cordon of the Chrysanthemum conferred in 1895, and the British decoration received in 1902, when he was created Grand Commander of the Most Honourable Order of the Bath.

ITSELF, *ĭt-sĕlf'* [*it*, and *self*]: a reciprocal and emphatic pron.—generally applied to things.

ITURÆA, *ī-tô-rē'â:* district of ancient Syria, in the n.e. of Palestine, between Lake Tiberias and Damascus, n. of Bashan and adjoining Auranitis, the modern Hauran. Though often confounded with Hauran, it is now called Jedur, from Jetur, one of Ishmael's sons. In the time of Christ it formed the tetrarchy or govt. of Philip, who received it from his father, Herod the Great. It contains 38 towns and villages, none of which are remarkable. See Luke, iii. 1.

ITURBIDE (or YTURBIDE), *ē-tôr-bē'thā*, Don AUGUSTIN DE, Emperor of Mexico: 1783, Sep. 27—1824, July 19 (reigned 1822-1823): b. Valladolid, now Morelia, Mex.; son of a Biscayan nobleman and a rich Creole. On occasion of the first insurrections in Mexico, he was appointed by the viceroy, Apodaca, to the command of the militia of his province, and, having brilliant military talents, was successful against the insurgents; but he afterward inclined more to the cause of national Mexican independence, and being trusted by the viceroy with the command of the army 1821, he went over to them, when he found it impossible to obtain from Spain a separate constitution for Mexico. In 1822, May, he was hailed by the soldiers as emperor, and ascended the throne as Augustin I.; and the congress declared the crown hereditary in his family. He ruled rather as a despotic than a constitutional sovereign; his reign was full of trouble, and came to an end in less than a year by his abdication 1823, Mar. 20, which he found himself compelled to offer to a congress which he had forcibly dissolved. He received from congress a yearly pension of abt. $25,000, in consideration of his military services in 1820, on condition of his retiring from the country,

and went with his family to Leghorn. Having resided a few months in that city, he went to England, where he devised a plan for the recovery of the empire which he had surrendered; and issued a statement that he would employ whatever influence he might obtain on his return to Mexico for the introduction of the political institutions of England into that country. The Mexican congress immediately declared him an outlaw, and forbade his setting foot in Mexico on pain of death. Ignorant of this, he embarked 1824, May 11; landed in disguise at the port of Soto-la-Marina, July 14; was arrested on the 17th, and without being allowed to appeal to the congress was shot at Padilla on the 19th. Congress made a provision for his family. Iturbide's soldiers almost idolized him, and he had a pleasing manner in private life. But he showed barbarous cruelty to his prisoners, boasting in a despatch that he had honored Good-Friday by shooting 300 wretches.—His grandson, AUGUSTIN, son of his eldest son ANGEL, and Alice Green, of Georgetown, D. C. and born in Washington, 1863, was adopted by the unfortunate Emperor Maximilian of Mexico as his heir, Maximilian himself being childless. See *A Statement of some of the Principal Events in the Public Life of Augustin de Iturbide, written by himself;* translated by M. J. Quin (1824).

ITURUP, *ē-tô-rôp′*, known also as ITOOROOP, ITOUROUP, *ē-tô-rôp′*, ATORKOO, *â-tawr-kô′*, GORTPOO, *gawrt-pô′*, and STAT'EN ISLAND: largest island of the Kooril group in the n. Pacific ocean; separated from the island of OOROOP on the n. by Vries Strait, and from the island of Koonasheer on the s. by St. Anthony Strait. It belongs to Japân, is 140 m. long, average width 20 m., mountainous and fertile, contains an active volcano, and has considerable trade in fish, lumber, and furs.

ITZAS, *ēt-sâs′*, or ITZAES, *ēt-sīs′:* Indian tribe of Maya stock, supposed to have migrated from Yucatan to the island of Tayasal in Lake Itza, on the boundary between Guatemala and Mexico, 1420. They established themselves strongly on the island, built a large city, adorned it with temples that subsequently took an entire army a whole day to destroy, and had attained a pop. of 25,000 when Cortez visited them, 1525. He was cordially received and entertained by them. The extreme inland position of their country and its destitution of the precious metals enabled the Itzas to retain their independence till 1698, when they were subdued by the Spanish gov. of Yucatan. Remnants of the tribe are still found on the Lake Itza islands.

IUKA, Miss., a small village on the Memphis & Charleston railroad, in the northern part of the state, about 115 m. e. of Memphis, was the scene of a severe engagement during the Civil War. Early in September, 1862, it was occupied by a small Union regiment as an

outpost. On the morning of September 13 Gen. Sterling Price, moving north from Tupelo with a force of 14,000 men, to prevent Grant from sending reinforcements to Gen. Buell in Kentucky, drove the Union regiment from the village and occupied it, and on the 19th was about moving to Rienzi on the Mobile & Ohio Railroad to form a junction with Earl Van Dorn's army preparatory to an attack upon Corinth. Gen. Grant had been closely watching the movements of Price and Van Dorn, and when he heard that Price had occupied Iuka he determined to attack and cut him off before he could effect a junction with Van Dorn. Gen. Rosecrans, who was near Corinth with 9,000 men, was ordered to move south to Rienzi and Jacinto, then eastward, and, marching on the roads from Jacinto and Fulton, to attack Iuka from the south. Gen. Ord, with 6,500 men, was to move along the Memphis & Charleston Railroad to Burnsville, thence by roads north of the railroad, and to attack on the north and west of Iuka. Grant accompanied Ord, who reached Burnsville on the 18th, and encamped within six miles of Iuka. Rosecrans, with the two divisions of Hamilton and Stanley, moved from Jacinto at 5 o'clock in the morning of the 19th and, after a march of 18 miles, at 4 P.M. his advance division (Hamilton's), about two miles south of Iuka, encountered Little's division of Price's command, Maury's division remaining in the north of Iuka, to confront Ord. Little had about 4,000 men, with which he attacked Hamilton vigorously before the latter could complete his lines. After a very severe fight, Hamilton was driven back some 600 yards, abandoning nine guns; but, receiving three regiments of Stanley's division as a reinforcement, he rallied and regained part of his lost ground, when darkness ended the fighting. Price prepared to renew the battle in the morning; but convinced by his subordinates of the critical position he was in with Rosecrans in his front and Ord in rear, retreated southward by the Fulton road, which Rosecrans had failed to close as was intended. Ord, advancing on the morning of the 20th, found that Price had escaped. Price retreated southward and reached Baldwyn September 23. Rosecrans and Ord returned to Corinth. Rosecrans reported a loss of 144 killed, 598 wounded, and 40 missing. Price reported a loss of 86 killed and 408 wounded; Union estimates placing it much higher.

IULIDÆ, n. *ī-ū'lī-dē* [L. *iulis*, a kind of millipede; *iulis*, a catkin; Gr. *ioulos*, the first growth of the beard, a catkin, a centipede, or a millipede]: family of Chilognatha (millipedes). The body is elongated and cylindrical, with numerous segments, each bearing two pairs of legs. They advance with a gliding motion and roll themselves up when in danger. They undergo a metamorphosis, the larva commencing with only six feet. The typical genus of the family is *Iulis*, the body of which has 40 to 50 segments, each with a pair of small legs.

IULIFORM, a. *-fawrm*, shaped like an iulus.

IVAN, or IWAN, *ē-vân'*, or JOANN [Russian form of John]: frequent Russian name.

IVAN I., Grand Duke of Moscow from 1328 to 1340: surnamed KALITA. He consolidated the power of Moscow, to whose territory he made large additions; he also brought the Metropolitan to reside there, adding thus to its importance. He so established Moscow in power and eminence, that it became the nucleus of the Russian empire. (The Russian rulers named IVAN are differently numbered, according as the Grand Dukes of Moscow are or are not reckoned.)

IVAN III. (THE GREAT), Grand Duke of Moscow, (ruled 1462 to 1505). He may be regarded as the founder of the Russian empire. At first only Grand Duke of Moscow, by skilful diplomacy and intrigue, he succeeded in shaking off entirely the yoke of the Tartars, and in subjecting a number of the Russian principalities to his own sway, among them the proud republic of Novgorod. In 1472, he married a niece of the last Byzantine emperor, in virtue of which he claimed to be the heir of the Byzantine line. By this marriage he brought the two-headed Byzantine eagle into the Russian arms, an emblem with which are connected pretensions not likely to be forgotten by the Russian emperors, although they may not be openly urged. This marriage opened a way also for the entrance of European civilization into Russia, which, on the whole was much benefited by this reign. Ivan III. sent embassies to foreign nations, invited Italian architects to his court, and gave refuge to Greek monks from the oppression of the Turks.

IVAN' IV. (THE TERRIBLE), first Czar of Russia: (reigned 1533–84.); died 1584. He did much for the advancement of his country in arts and commerce, as well as for its extension by arms. He concluded a commercial treaty with Queen Elizabeth, after the English had discovered the way to Archangel by sea. In his time a printing-press was set up in Moscow. In the latter years of his reign he committed the atrocities which have given him his name 'Terrible'; among which was the slaughter of 60,000 persons—other accounts make the number only 25,000—at Novgorod in six weeks, on account of a supposed plot to deliver up the city and surrounding territory to the king of Poland. He died of grief for his son whom he had killed in a fit of rage three years before.

IVAN' V., Czar of Russia: (reigned 1740–1) d. 1764, Dec. 5; son of Duke Anthony Ulric of Brunswick-Wolfenbüttel, and the Russian Grand Duchess Anna Carlowna, Empress Anna Ivanowna adopted him as her son and heir, but she dying soon after, and Elizabeth, daughter of Peter the Great, seizing the throne, he was imprisoned during the remainder of his life: and by the orders either of Empress Catharine II. or of her counsellors, was put to death by the officers of the garrison at Schlüsselburg

where he was confined. It was said that his long imprisonment had made him imbecile.

IVANHOE, the title of one of Sir Walter Scott's most famous novels, written and published in 1819. The manuscript is now at Abbotsford. Immediately after its appearance, 'Ivanhoe' became a favorite, and now ranks among the most brilliant and stirring of romantic tales. The scene of the tale is England in the reign of Richard I.

-IVE, suff. *-ĭv:* common adjective suffix in English, derived from the Latin *-ivus;* it gives an active force to the stem to which it is suffixed; as motive, that which moves; formative, that which forms.

IVES, *īvz*, ELI, M.D.: 1779, Feb. 7—1861, Oct. 8; b. New Haven: one of the founders of the medical dept. of Yale University. He graduated at Yale College 1799, was rector of the Hopkins grammar-school in New Haven, 1799–1801; studied medicine with his father, Levi Ives, M.D.; was associated with Prof. Benjamin Silliman in establishing the medical dept. of Yale, 1813; was prof. of materia medica there, 1813–29, and of the theory and practice of medicine, 1829–52; founded the Horticultural and Pomological Socs.; was president of the Conn. and National Medical Assocs., and was active in educational and reformatory movements.

IVES, FREDERIC EUGENE: an American inventor; b. in Litchfield, Conn., 1856, Feb. 17; was in charge of the photographic laboratory of Cornell Univ., 1874–78; invented the first practically successful process of half-tone photo-engraving, 1878; the half-tone photo-engraving process now universally employed, 1886; color photography on the trichromatic principle, which afterward culminated in the three-color printing process on the typographic press; and the kromskop. He has lectured extensively before scientific societies in the United States and England; also written *Isochromatic Photography with Chlorophyll* (1886); *A New Principle in Heliochromy* (1889); etc.

IVES, LEVI SILLIMAN, D.D., LL.D.: 1797, Sep. 16—1867, Oct. 13; b. Meriden, Conn.; bishop of the Prot. Episc. Church. He was brought up on his father's farm, served a year in the army in the war of 1812–15, was educated at Lowville Acad., entered Hamilton College to prepare for the ministry of the Presb. Church 1816, withdrew on account of feeble health, joined the Prot. Episc. Church, 1819, was ordained deacon 1822 and priest 1823, and elected bishop of N. C. 1831. In 1848–9 he exhibited such strong sympathy with the tractarian movement in England, that he was brought into antagonism with the majority in his diocese, and after publicly renouncing and then reasserting the objectionable doctrines he went to Rome and joined the Rom. Cath. Church in 1852. He was deposed from his bishopric in the Prot. Episc.

Church, and after his return to New York became prof. in St. John's College (Rom. Cath.), at Fordham, lecturer in the convents of the Sacred Heart and the Sisters of Charity, and founder and first pres. of the Catholic Protectory for Destitute Children. He published a *Catechism* for the slaves in N. C., *Manual of Devotion, Humility a Ministerial Qualification* (1840), *Sermons on the Obedience of Faith* (1849), and *The Trials of a Mind in its Progress to Catholicism, a Letter to his Old Friends* (1853).

IVORY, n. *ī'vō-rĭ* [F. *ivoire;* OF. *ivurie;* It. *avorio,* ivory—from L. *ĕbŏrĕŭs,* pertaining to ivory—from *ĕbŭr,* ivory: Skr. *ibha,* an elephant]: bony tusk of the male elephant; also teeth or tusks of the sea-horse; any white organic structure resembling ivory. ADJ. made or prepared from ivory; resembling ivory. IVORY-BLACK, carbonized or charred bone or ivory (see BONE-BLACK). IVORY-NUT, the nut of a species of palm-tree—so called from the fluid found in the nuts hardening into a whitish close-grained albuminous substance, often called *vegetable ivory,* from its resembling ivory in texture and color (see IVORY, VEGETABLE). I'VORIES, n. plu. *-rĭz,* a general term for works of art executed in ivory.

I'VORY: name formerly given to the main substance of the teeth of all animals, but now restricted to that modification of *dentine* or tooth-substance which in transverse sections shows lines of different colors running in circular arcs, and forming by their decussation minute lozenge-shaped spaces. By this character, which is presented by every portion of any transverse section of an elephant's tusk, true ivory may be distinguished from every other kind of tooth substance, and from every counterfeit, whether derived from tooth or bone. Although no other teeth, except those of the elephant, present this characteristic, many other animals, such as the walrus, narwhal, hippopotamus, etc., possess teeth, horns, or tusks, which, from their large size and from their density, can be used for the same purposes in the arts as those for which true ivory is employed. Also, see IVORY, VEGETABLE; CELLULOID. The ivory of the tusks of the African elephant is held in the highest estimation by the manufacturer, on account of its greater density and whiteness. The tusks are of all sizes, from a few ounces in weight to more than 170 lbs. each. Holtzapffel states that he has seen fossil tusks from the banks of the rivers of n. Siberia which weighed 186 lbs. each. The average weight of tusks in the African ivory districts is stated at 20 to 50 lbs. There are various chemical processes by which ivory may be dyed of various colors, as black, blue, green, yellow, red, and violet. Ivory articles can be made flexible and semi-transparent by immersion in a solution of phosphoric acid of sp. gr. 1·130, till they become translucent. They are then taken out, washed with water, and dried with a soft cloth, when they are

as flexible as leather. They harden on exposure to dry air, but resume their pliancy when immersed in hot water. For much important information on ivory generally, see Holtzapffel's *Mechanical Manipulation.*

The tusks of the elephant have from very early times been an important article of trade, in consequence of their beauty as a material for ornamental manufactures, and even for works in fine art. Ivory is frequently mentioned in the Old Testament. With the Greeks it became a most important material, and by the hands of the sculptor Phidias were made noble statues of ivory with gold. By the Romans, who were supplied from Africa, it was also extensively used, and by them, its use was diffused over Europe. The art of working in ivory doubtless had its origin in India, where the material has always been much valued, and whence was formerly supplied much of the ivory sent to Europe. The value of ivory is in proportion to the size and soundness of the teeth. Below the weight of five pounds, they are called *scrivelloes,* and formerly seldom brought as much as $1.25 per lb.; while double that sum was a very high price for unusually large teeth. But in consequence of its increasing scarcity by reason of the gradual but reckless extermination of the elephant, there has been a great rise in the price of ivory in recent years.

The so-called ivory obtained from the hippopotamus is in especial favor with dentists for making false teeth on account of its pure white color and freedom from grain. The fossil ivory found in considerable quantity in Siberia and the arctic regions, is uncommonly hard and brittle; it is also whiter, and lacks its waxy softness. At present, the demand for ivory is rapidly increasing, owing to the great taste and skill of some of the artists who work in this material, and as the supply increases very slowly, the price is likely to become very great. The beautiful art of ivory-carving has recently made extraordinary progress, as has been shown by works in ivory sent to the various international exhibitions; some single specimens have had a value of $2,500.

I'VORY, ARTIFICIAL. See CELLULOID.

I'VORY, VEGETABLE: close-grained, whitish, albuminous substance, furnished by one of the most beautiful of all the palm tribe. It grows on the Andean plains of Peru, and on the banks of the river Magdalena and other parts of S. America. The stem of this palm (the *Phytelephas macrocarpa*) is short and procumbent, but it has, proceeding from its crown, a magnificent tuft of light-green pinnated leaves of extraordinary size and beauty; they are like immense ostrich feathers rising from 30 to 40 ft. in height. The flowers are on a crowded spadix, and have neither calyx nor corolla. The fruit, as large as a man's head, consists of many 4-celled leathery drupes aggregated together, and contains numerous nuts of somewhat triangular form, each nut being nearly

as large as a hen's egg; they are called *Corozo nuts* in commerce. The kernels of these nuts when ripe are exceedingly hard and white, in fact they resemble ivory so completely that few names have ever been better applied than that of vegetable ivory. They have of late come into extensive use by turners in the manufacture of buttons, umbrella handles, and small trinkets, and so closely resemble true ivory as frequently to deceive competent judges. Millions of these nuts are now exported annually; they are largely used by the London and Birmingham turners.

I'VORY COAST: part of the Atlantic coast of Upper Guinea, west Africa, between the Grain Coast or Cape Palmas on the w., and the Gold Coast or the Assinie river on the e. The Ivory Coast is low, sandy, and unhealthful, but the interior is rich in fertile table-lands. The chief places, former trading stations for the interior settlements, are Fort Nernour, Grand Bassam, Piccaninny Bassam, Drewin, Walloo, Assinie, and Kutenu. Formerly there was a large traffic in gold-dust, ivory, and palm oil, but for a number of years this trade was so unimportant that the French abandoned most of the stations. In 1884 they re-occupied Grand Bassam, Assinie, and Kutenu, but for political purposes chiefly.

IVY, n. *ī'vĭ* [AS. *ifig;* O.H.G. *ebah;* Ger. *epheu*, ivy; Gael. *eidhean*, ivy—from *eid*, to clothe]: a well-known evergreen climbing plant of many species; the *Hĕdĕra Hĕlix*, ord. *Arālĭācĕœ*. IVIED, a. *ī'vĭd*, overgrown with ivy. IVY-MANTLED, overgrown or covered with ivy.

I'VY (*Hedera*): genus of plants of nat. ord. *Araliaceœ*, consisting of shrubs and trees, natives mostly of tropical countries. The flowers have five or ten petals, and five or ten converging or consolidated styles. The fruit is a berry with five or ten cells.—The COMMON IVY (*H. helix*) is a well-known native of most parts of Europe, though it is more rare in the northern countries. It, with other species, grows also in America. Its long, creeping, branched stem—climbing on trees and walls to a great height, and closely adhering even to very hard substances by means of rootlets which it throws out in great abundance along its whole length—acquires in very aged plants almost the thickness of a small tree. Its 5-lobed, shining, stalked, evergreen leaves, clothing bare walls with green luxuriance, serve to throw off rain, while the rootlets of the stem suck out the moisture, so as to render damp walls dry, contrary to a common prejudice, that ivy tends to produce dampness in walls. It injures trees, however, both by abstracting their sap and by constriction. The flowering branches of ivy have ovate, entire leaves, very different from the others. Its small greenish flowers are produced in the beginning of winter, and the small black berries are ripened in the following year. The berries are eagerly eaten by many birds, though they have a pungent taste,

and contain a peculiar bitter principle called *hederine,* and an acid called *hederic acid;* which are also found in a gummy exudation obtained by incisions from the stem, and, occasionally used in medicine as a depilatory and a stimulant, and in varnish-making. An ointment made from the leaves is used in the Highlands of Scotland to cure burns. In Egypt the ivy was sacred to Osiris, in Greece to Bacchus (Dionysos), whose thyrsus was represented as surrounded with ivy; the Romans mingled it in the laurel crowns of their poets.

There are several varieties of ivy often planted for ornamental purposes, of which that generally known in Britain as *Irish Ivy,* and on the European continent and in America as *English Ivy,* is particularly esteemed for its large leaves and luxuriant growth. It is said to be a native of the Canary Isles. Ivy grows readily from cuttings.—*H. àmbellifera,* native of Amboyna, is said to produce a finely aromatic wood; and *H. terebinthacea,* a Ceylonese species, yields a resinous substance which smells like turpentine.

On the American continent, the ivy, like the holly, is rare, not that the winters are too cold, but that the summers are too hot and dry. The requirements of the plant are not duly attended to. Usually, where native ferns grow, the ivy will thrive. The varieties of *Hedera Helix* should be preferred. In dry districts, ivy should be planted on the n. side of buildings, and for the first four years carefully watered and trained: afterward it can care for itself. The ivy thrives well in the shade.

IWAKURA TOMOMI, *ē-wâ-kô′râ to-mō′mē;* 1825–1883, July 20; b. Japan: statesman. He was a member of the class of nobles, was educated at Kioto, attached himself at an early age to the personal fortunes of the Mikado then in confinement, was received at the imperial court 1858, was active in overthrowing the Tycoon and establishing the govt. of the Mikado, was soon afterward appointed a member of the privy council, became vice-pres. of the imperial cabinet 1868, received the title *Sionii* and a special mark of the emperor's friendship 1869, was appointed minister of foreign affairs and vice prime minister 1871, visited the United States and the great treaty powers with a special embassy, opposed aggressive movements in Corea and Formosa, for which he was nearly murdered 1874; and was vice prime minister and third president of the council from 1871 till ill health compelled him to resign shortly before his death. He was a man of superior culture, an advocate of national progress, and the leader of the peace party in Japan. Three of his sons were educated in the United States.

IWIS, or YWIS, ad. *ĭ-wĭs′* [AS. *gewis,* certain: Dut. *gewis,* certain, certainly: Ger. *gewiss,* certainly]: in *OE.,* certainly.

IXION, *ĭks-ī′on:* in mythology, King of Gyrton or Thes-

saly, variously reputed the son of Phlegyas, of Leontes, and of Antion by Perimela, daughter of Amythaon. He married Dia, daughter of Deioneus, treacherously murdered his father-in-law while the latter was his guest, was shunned for his crime by all mankind, was taken to heaven by Jupiter, where he attempted to seduce Juno, was banished from the company of the gods, and punished by being bound to a wheel which rolls unceasingly through the air. He was the father of the centaurs.

IXOLYTE, n. *ĭks'ō-līt* [Gr. *ixos*, bird-lime; *lithos*, a stone]: one of the mineral resins of a hyacinth-red color, which becomes soft at 169° Fahr.

IXORA, n. plu. *ĭks-ō'ră* [from *Iswara*, a Malabar deity to whom scarlet flowers were offered]: a genus of Indian and tropical African shrubs, ord. *Cinchŏnācĕæ*, producing corymbs of handsome scarlet, pink, or white flowers, frequently of an agreeable fragrance.

IZALCO, *ē-sâl'kō:* active volcano 36 m. n.w. of the city of San Salvador in the Central American republic of that name, near lat. 13° 15′ n., long. 89° 44′ w. It suddenly burst out in a level plain used as a cattle range 1770, Feb. 20, has since grown to a height of more than 6,000 ft., has an eruption every 16 minutes, its sides are wholly destitute of vegetation, and the light of its burning crater is visible far at sea. Excepting Jorullo in Mexico it is the only known volcano that has arisen from the level of the plain. It is locally called 'the lighthouse of San Salvador.' The city of Izalco has a pop. of 4,000 to 5,000, chiefly Indians, and previous to the earthquake of 1859 had considerable commercial importance.

IZARD, *ĭz'ẻrd*, GEORGE: 1777–1828, Nov. 22; b. S. C.: soldier. He received a collegiate education, was appointed lieutenant of artillery 1794, served as lieutenant in the French engineers 1796–7; became engineer in charge of the fortifications in Charleston harbor 1798, was promoted captain and appointed aide to Gen. Hamilton 1799; resigned 1803, appointed colonel of artillery 1812, Mar., promoted brigadier-general 1813 and major-general 1814, and was governor of Arkansas Territory 1825 till his death.

IZ'ARD, RALPH: 1742–1804, May 30; b. near Charleston, S. C.: statesman. He inherited a large estate in lands and slaves, graduated at Cambridge Univ., England, spent several years in New York and London, espoused the patriot cause at the beginning of the revolutionary war, was appointed by congress commissioner to Tuscany 1776, Dec., established his residence at Paris, supported the policy of Arthur Lee against that of Franklin, Deane and other colonial agents in France; returned to the United States 1780, July; pledged his estates as security for the purchase of ships of war in Europe, was a delegate in congress 1782–3, U. S. sen-

ator from South Carolina 1789–95, and president pro tempore of the senate in the 1st session of the 3d congress.

IZDUBAR, *ĭz-dô-bâr′:* name of a person appearing frequently in the 12 tablets of Chaldæan inscriptions discovered (1872) and translated by the Rev. George Smith, and now in the British Museum (photographic copies in the Smithsonian Institution, Washington). The tablets give an account of the adventures and misfortunes of Izdubar, and the 11th presents the Chaldæan account of the Deluge. The identity of Izdubar is questioned by able mythologists. The discoverer of the tablets believes him to have been a king of Babylonia, identical with the Biblical Nimrod, while Sir Henry Rawlinson, Prof. Max Müller, and G. W. Cox maintain that the tablets present a series of myths or legends, the prototype of the 12 labors of Hercules, and that Izdubar was merely a convenient hero of them.

# J.

J, or j, *jā:* tenth letter in the English alphabet; now uniformly used as a consonant, but formerly treated as a vowel, and identical with the vowel *i:* J is still found as *i* in old notations, as vij. for vii. = 7. J has in Eng. the power of *dzh;* in Fr., of *zh;* and in Ger., of *y*. Both the sound and the character have sprung out of the original vowel *i*. When such a word as *Iulius* is pronounced rapidly, it naturally slides into *Yulius*. The Romans, though they had but one character for both, recognized this distinction between the vowel and the semi-vowel; and in the case of such words as *cuius, maius,* some writers doubled the *i,* and wrote one or both long, as cuIIus or cuiIus. There is little doubt that the original Roman sound of this semi-vowel was that of Eng. *y* (youth), still given to it in German. But as this sound has a tendency to convert the consonant preceding it in a sibilant (see letter C), so it has a tendency to become itself sibilant, and *Yul-* slides into Fr. *zhul-*, Eng. *dzhul-*. This transition had already taken place in the later ages of the Latin, at least in the popular pronunciation, as appears from such inscriptions as *congiunta,* for *conjuncta; Zesu,* for *Jesu.*

The Dutch scholars of the 16th and 17th centuries first introduced a regular distinction between the consonantal and vowel powers of *i,* and marked the former by the distinct character *j* (a long *i,* projecting below the line). The character has been adopted in the modern Teutonic and Romanic languages. The Italian represents the sibilant sound of *j* by *gi* or *ggi,* as *Giovanni,* from Lat. *Johannes; maggiore,* from Lat. *maior.* In Span., it has a guttural power, and is interchangeable with *x,* as *Xerces,* or *Jeres.*

JAAL-GOAT, n. *jā'al-gōt: Capra jaela,* the Abyssinian ibex; found in the mountains of Abyssinia, in Upper Egypt, at Mount Sinai, and probably in Persia.

JABBER, v. *jăb'bėr* [imitative of a noisy indistinct utterance: Scot. *gabber:* F. *japper,* to yelp; *jaboter,* to mutter: Icel. *gabba,* to mock, to scoff]: to talk rapidly and indistinctly; to talk nonsensically; to chatter: N. utterance of words rapidly and indistinctly. JAB'BERING, imp. JAB'BERED, pp. *-bėrd.* JAB'BERER, n. *-bėr-ėr,* one who.

JABBOK, *jăb'ŏk:* river of Syria, rising in the Haooran, flowing w., passing n. of Mount Gilead, and, after a course of about 45 m., emptying into the Jordan about 30 m. n. of the Dead sea. It formed the n. boundary

of Ammon, and separated the kingdom of Sihon, King of Heshbon, from that of Og, King of Bashan. On the s. bank of Jabbok Jacob and Esau held their interview. It is now known as Zeska or Zurka. See Num. xxi. 24; Deut. ii. 37; iii. 16; Josh. xii. 2; Judg. xi. 13, 22; Gen. xxxii. 22.

JABIRU, n. *jăb'ĭ-rô'* [Brazilian], (*Mycteria*): genus of wading birds of the same family with storks and adjutants; the chief distinction from the storks being that the bill is a little curved upward. The species are few, but are widely distributed in S. America, Africa, and Australia. It is about five feet high, with stilt-like legs, and massive, slightly upcurved beak; the plumage is white and the naked head and neck black. In habits it resembles the other storks (q.v.). Several related Oriental species have received the same name.

JABORANDI, *jăb-o-răn'dĭ:* drug made from the leaves and twigs of the *Pilocarpus pinnatus*, whose valuable properties were established by Dr. Coutinho, of Pernambuco, 1875, and which is esteemed as one of the most important of the recent additions to materia medica. It is fond in various parts of S. America, but chiefly in Brazil; attains an average height of 10 ft., has leaves 1 ft. or 1½ ft. long composed of clusters of from 4 to 10 smaller ones (4 in. long), with dark-green upper surface and paler shining under surface, and its leaves and stems when crushed have an aromatic smell and bitter taste. A volatile oil and an alkaloid (*pilocarpin*), which is converted into salts when combined with certain acids, are the constituents of the drug. Jaborandi is now known as one of the most powerful diaphoretics, or promoters of insensible perspiration, and is used in numerous other methods of medical treatment; but should never be taken unadvisedly. Its efficacy has been proved in certain cases of pleurisy, asthma, kidney disease, ordinary dropsies, mumps, intermittent fevers, and in some forms of opthalmic operations.

JABUTICA'BA. See Eugenia.

JACAMAR, n. *jăk'ă-mâr'* [F. *jacamar*]: one of a genus of birds inhabiting tropical America, of brilliant plumage, allied to the kingfishers, and having the habits of the bee eaters.

JACANA, n. *jă-kâ'nă* [Brazilian], (*Parra*): genus of birds allied to the rails, of the order *Grallæ*, commonly ranked in the family *Rallidæ*, natives of warm spots of Asia and the Asiatic islands, Africa, and S. America. In general appearance, they much resemble gallinules and coots. The wings are armed in front with sharp spurs. The feet, though not webbed, are adapted, by the great length of toes and claws, for walking on the surface of weed-covered lakes and swamps, the native haunts of these birds. The Common Jacana (*P. Jacana*) is a S. American species, abundant in Guiana and Brazil;

about 10 in. long; black, except the back and part of the wings, which are of bright chestnut color. The INDIAN JACANA (*P. Indica*) and the CHINESE JACANA (*P. Sinensis*) are among the best known species.

JACARANDA, n. *jăk'ă-răn'dă* [Brazilian]: fine lofty tree, from which is obtained a very hard, heavy, brown wood, called also *Rosewood*, from its faint agreeable smell of roses. Rosewood, or Jacaranda wood, is exported from S. America, and is produced by several trees of the genus *Jacaranda*, of nat. ord. *Bignoniaceæ*. Several species of this genus are called *Caroba* in Brazil, and are there accounted anti-syphilitic.—Several species of the nearly allied genus *Tecoma* have an extremely hard wood, as *T. pentaphylla*, native of the Caribbean Islands. The Brazilian Indians make their bows of the wood of *T. toxiphora* or *Pao d'arco*.

JACARE, *jăk'a-rā*, or YACARE, *yăk'a-rā:* name of various species of Alligators found in S. America: see ALLIGATOR.

JACHMANN, *yâch'mân*, EDUARD KARL EMANUEL: b. Dantzic, Prussia, 1822, Mar. 2; d. 1887: naval officer. He entered the Prussian navy as cabin boy 1839, was commissioned lieut. 1845, promoted commander of a gunboat squadron 1849, capt. 1855, commanded a naval expedition to open commercial relations with China and e. Asia 1859–62, promoted commander of the Baltic fleet, created rear-admiral for his services in the war with Denmark 1864, chief of the naval station at Kiel 1864–7, appointed pres. of the naval dept. 1867, promoted vice-admiral 1868, commander-in-chief of the whole German navy 1871, Dec. 31, and retired 1872.

JACINTH, n. *jā'sĭnth* [F. *jacinthe*—from L. *hyăcin'thŭs*]: another name for the *hyacinth*, a species of precious stone, of various colors; called also *jargon* or *zircon*.

JACITARA PALM, *jăs-ĭ-tâ'ra pâm* (*Desmoncus macroacanthus*): species of palm in the forests of the low lands of the Amazon district, S. America. It has a slender flexible stem (see DESMONCUS), often 60 or 70 ft. long. The outer part of the stem, cut into long strips, is used for making those very strong and elastic plaited cylinders in which the grated root of the mandioc (cassava or tapioca) is squeezed, to free it from its poisonous juice.

JACK: a coat of mail. See under JACKET.

JACK, n. *jăk* [usually treated as a familiar corruption or diminutive of *John;* but really from F. *Jacques* for L. *Jacōbŭs* (English *James*): F. *jaque*, a garment much worn by the *Jacques*, or the revolted peasants of France in the 14th cent.: comp. Gael. *ditheach* = *jĕăch*, a beggar, a low fellow]: name applied as an expression of familiarity; *colloq.*, a low fellow: an upstart: applied to various mechanical contrivances for replacing the per-

sonal service of an attendant; a screw for raising heavy weights; a contrivance to turn a spit; any timber cut short of its usual length; a leathern cup or jug; a flag or ensign; a sailor—usually in composition, as *jack-tar;* a playing card, more properly called the KNAVE. —'The Jewish *Jacobus* was corrupted through Jacquemes to *Jaques* in France, and *James* in England; and *Jaques* being the commonest Christian name in the former country, was used as a contemptuous expression for a common man; *Jacquerie*, an insurrection of the peasants. The introduction of the word in the same sense into England seems to have led to the use of Jack as the familiar synonyme of John, which happened to be there the commonest name, as Jaques in France. The term was then applied to any mechanical contrivance for replacing the personal service of an attendant, or to an implement subjected to rough and familiar usage.' —Wedgewood's *Dic. of Eng. Etymology.* This explains the very varied use of this word, whether single or in composition; as *boot-jack*, *jack-boots*, *black-jack* (leathern jug for household service). *Jacket* (diminutive of Jack) is a short coat for homely use. JACK, a. sorry; coarse; indifferent; a prefix signifying male, as JACKASS. JACKS, n. plu. wooden wedges used in coal-mining. BOOT-JACK, an implement for taking off and putting on boots. JACK'-STRAW, n., slip of straw, wood, ivory, bone, or other material used in a game, in which all the strips are thrown into confusion on a table to be picked singly with a hooked instrument without disturbing the rest. JACK-TOWEL, a coarse towel hanging from a roller for general use. JACK-BOOTS, tall boots of tough thick leather, reaching above the knee; formerly worn by cavalry; now worn by civilians in various kinds of rough work. In some instances, as an additional protection against sword-cuts, they were lined with thin plates of iron. The only regiments in the British service which still retain these handsome but cumbrous boots are the Life Guards and Royal Horse Guards: see BOOTS. BLACK-JACK [Dut. *jakke*]: a leathern jug for household service. JACKING-UP, elevating masses of machinery and heavy structures by means of jacks. Also planing the rough outsides of boards with a jack plane. JACK-PLANE, a large plane for heavy work. JACK-SCREW, screw used for stowing cotton in the hold of a ship; also, machine for raising heavy weights, such as houses and ships. The forms are various; the most convenient is a single screw, whose inclined plane is as near as practical to the horizontal. The most powerful form is a differential screw. JACK-STAFF, the staff upon which the union-jack is hoisted. UNION-JACK, the national flag of Great Britain and Ireland, exhibiting the union of the three crosses—see under UNION. JACK-IN-A-BOX, a figure made to start out of a box on opening the lid; a piece of machinery for raising heavy weights

a little way off the ground. JACK-IN-OFFICE, a person who presumes on the authority with which he is invested. JACK-OF-ALL-TRADES, one able to turn his hand to many things, generally used in a half-contemptuous sense. JACK-PUDDING, a merry-andrew. JACK-A-LANTERN, or JACK-WITH-A-LANTERN, or JACK-O'-LANTERN, will-o'-the-wisp; the ignis fatuus (q.v.). JACK-O'-THE-CLOCK, in *OE.*, a figure on an old clock, generally of a man with a club or hammer, which struck the hours on the bell.

JACK, ELECTRIC: a form of plug switch, usually making several connections. Generally used in telephone switch-boards. See TELEPHONE.

JACK, *jăk*, or JAK, *jâk*, or JACA, *jâ'ka* (*Artocarpus integrifolia*): tree of the same genus with the Bread-fruit (q.v.), native of the E. Indies. It is a larger tree than the Bread-fruit, and has undivided leaves. The fruit is very large, weighing from 5 lbs. to 50, sometimes 70 lbs. The fruit, produced in very great abundance, resembles the bread-fruit, but it is of inferior quality, the pulp having a strong unpleasant flavor; yet it forms great part of the food of the natives in parts of India, Ceylon, etc. The seeds, which lie immediately under the rind, are very palatable when roasted. The timber, which is yellowish, is used for almost every purpose, being both strong and ornamental, and is exported to Europe for making musical instruments, cabinet-work, the backs of brushes, marqueterie floors, etc. The Jack is now much planted in many tropical countries of which it is not a native.

JACKAL, n. *jăk'awl* [Ar. *jakal;* Pers. *shaghál;* Sp. *chacal*]: wild carnivorous animal inhabiting Asia and Africa, resembling partly a dog and partly a fox; *figuratively,* one who does the disreputable work of another.

JACK'AL: common name of a number of species and varieties of the dog genus, abounding in many parts of Asia and Africa, but not found in any of the other quarters of the globe, except that one of the kinds extends into Greece. They agree in all their most important characters with wolves and dogs, and many naturalists suppose that some of the domestic varieties of dog are of jackal parentage. The pupil of the eye is circular, as in the dog and wolf, though the form and tail are somewhat fox-like. The head is narrow, and the muzzle pointed. The ears are erect, and rather large. The tail is not so long as in foxes, but almost equally bushy. All the jackals are of small size, as compared with wolves, seldom exceeding 15 inches in height at the shoulder. Their colors are buff and tawny, more or less grizzled; the tip of the tail is always dark. They make holes for themselves in the ground by burrowing, or take possession of such as already exist among rocks or ruins; and in these they spend the day, not venturing abroad till the dusk of evening. They hunt during the night in troops, and their howlings are described as

peculiarly horrible. The notion that the Jackal is the *lion's provider*, and guides the royal beast to his prey, is one of the exploded fables of natural history, though it may have some foundation in the lion's occasionally following a troop of jackals in full cry, and appropriating 'the lion's share.' Jackals are not only ready to devour any animal which they can run down, but any carrion which they find. They follow armies; they dig up the ill-buried dead, they rob hen-roosts and outhouses; but they are as omnivorous as domestic dogs, eating farinaceous or other vegetable food when it comes in their way; they are even said, like foxes, to enter vineyards, and devour the grapes. They have a very offensive smell, which is said to diminish through domestication, and they are domesticated without difficulty. The name of COMMON JACKAL is sometimes given to the species (*Canis aureus*) found in w. Asia: it is in general yellowish gray above, and whitish below, with yellow legs and thighs. But it is doubted if this animal was in ancient times plentiful, as it is now, in Syria and neighboring parts of Asia. It may have followed the track of armies from the farther east. It is nearly certain that it has, in comparatively modern times, become common in parts of Asia more northern than it formerly inhabited. Probably it is included under the name *foœ* in the Hebrew Scriptures.

JACKALENT, n. *jăk'ă-lĕnt'*, or JACK-O'-LENT: in *OE.*, a game during Lent, in which a puppet was thrown at—said to represent Judas Iscariot.

JACKANAPES, n. *jăk'ă-nāps* [a corruption of *Jack-o'-apes*, a man who exhibits performing apes]: one who conducts himself as an ape; an impertinent fellow; a monkey.

JACKASS, n. *jăk'ăs* [*jack*, and *ass*]: the male ass. See ASS.

JACK'ASS, LAUGHING (*Dacelo gigantea*): bird of the Kingfisher family (*Halcyonidœ*), and sometimes described in works on natural history as the Great Brown Kingfisher. It agrees very nearly with the kingfishers in its form and characters, but differs from them in its habits, not frequenting waters, nor feeding on fish, but preying on beetles, reptiles, and small mammalia. It is about 18 inches long, and mostly of brown color. It is common in Australia, and has received its name from the colonists, on account of the peculiar sounds which it utters. The natives call it *Gogobera*, apparently in imitation of its cry. It is of great use in preventing the excessive multiplication of reptiles and other pests. Its bill is powerful enough to crush the heads of snakes. It is easily tamed, and is sometimes kept in gardens, from which it does not seek to escape.

JACK'DAW, [see JACK], or DAW (*Corvus monedula*): species of crow, smaller than the rook and carrion crow,

its utmost length being only about 14 inches. It is black, with dark-gray neck. It is a common British bird, plentiful in parts of continental Europe, Asia, and n. Africa; not found in America. It builds its nest in holes of cliffs, ruins, etc. It frequents towns and villages, often making its nest in a chimney, dropping down stick after stick till some of them become fixed in their oblique descent; and on these, others are piled, affording a firm base for a nest of wool or other soft substance.

JACKET, n. *jăk'ĕt*, or JACK, n. *jăk* [F. *jaquette*, a child's coat, the dim. of *jaque*, a jacket, a coat of mail: Sp. *jaco*, a soldier's jacket: a homely substitute for a coat of mail; a military coat worn over the coat of mail; a short loose coat terminating at the waist. In a locomotive the outside coverings of the cylinders and the boiler. The boiler jacket is composed of layers of wood called 'lagging' about seven-eighths of an inch in thickness, felt, and Russia iron, placed around the boiler to prevent the loss of heat by radiation and convection. JACK'ETED, a. *-ĕt-ĕd*, wearing a jacket; having a hollow vessel or covering outside the main vessel.

JACK'MAN, WILBUR SAMUEL, American educator: b. Mechanicstown, Ohio, 1855, Jan. 12; d. 1907, Jan. 28. He studied at Allegheny College (Meadville, Pa., 1880–2), was graduated from Harvard in 1884, and later became dean of the school of education in the University of Chicago, and head of the natural science department of the school. In 1899–1900 he visited Holland, France, and Germany for the study of educational methods. In addition to many articles on pedagogical topics, he published: *Nature Study for the Common Schools* (1891); *Number Work in Nature Study* (1893); *Field Work in Nature Study* (1894); *Nature Study Record* (1895); *Nature Study and Related Subjects* (1898); and *Nature Study for the Grammar Grades* (1898).

JACKSON, *jăk'sŏn*, Mich.: city, cap. of Jackson co., on Grand river, 76 m. w. of Detroit, and on the main line of the Michigan Central railroad. It is also the termini of a number of other roads, which constitute it an important railroad center. It is connected with Detroit, Battle Creek, and Kalamazoo by traction lines. The first permanent settlement was made here in 1829, by Horace Blackman, who the following year laid out a town which he called Jacksonburgh. The same year a post-office was established there by the government, and called Jacksonapolis; and in 1838 the name was changed to Jackson. The place grew rapidly, and was incorporated as a city in 1857. It is situated in the midst of a rich agricultural region, and enjoys a large trade in fruits, grains, and vegetables. Its leading manufactures are sewer-pipe, flour, soap, starch, automobiles, pianos, oil-stoves, wheels, engines and motors, locomotives, foundry products, agricultural implements, corsets,

underwear, etc. The car shops of the Michigan Central railroad, employing 1,200 men, are located here. The textile manufactories, wagon-making, iron and steel works, mining, cigar-making, and the manufacture of Portland cement employ an aggregate of about 6,000 men, with an annual output of more than $10,000,000. Coal and potter's clay exist in the immediate locality. There are 4 banks, with a combined capital of $450,000, surplus and undivided profits of $275,000, and deposits of over $4,000,000. There are 28 church edifices, representing all of the leading denominations; and the school system is exceptionally fine, there being two high and 17 graded public schools, besides three Catholic schools. The city has a hospital and two sanitariums, a Carnegie public library, the Michigan State Prison, and other prominent public edifices. There are two morning and two evening daily newspapers, two semi-weeklies, and three weeklies, one of which is printed in German. The city owns and operates the waterworks, and is lighted by gas and electricity; and the electric trolley lines operate about 10 m. of track. The executive authority is vested in a mayor and a council of 16 members, elected for a term of two years. Pop. (1905) 28,000.

JACKSON, Miss.: cap. of the state and of Hinds co., on Pearl river, and the Yazoo & M. V., Illinois Central, and the Alabama & V. railroads, 40 m. e. of Vicksburg. The first settlement was made here in 1828 or 1829, and the city was incorporated in 1840. It was occupied for some time in 1863 by the Union forces under General Grant, and the ruins of the old fortifications are still in existence. In 1864 the place was almost entirely destroyed by General Sherman's orders. The city is located in a cotton-growing and agricultural section, and its railroad and river facilities have greatly stimulated its commerce and trade. The soil of the surrounding country is extraordinarily rich and productive. The chief industrial establishments are cotton-seed oil mills, a cotton-compress, fertilizer factories, sash, door, and blind factories, foundries, brickyards, plow, harrow and broom factories, cooper shops, etc. The State Capitol is an imposing building, and there are a number of educational and charitable institutions; also James Observatory and the State Library. Milsap's College, founded in 1892 under the auspices of the Methodist Episcopal Church, South, is also located here; and the Bellhaven College for young ladies. Pop. (1910) 21,262.

JACKSON, Ohio: cap. of Jackson co., on Salt Creek, and on branches of the Baltimore & Ohio S. W., the Hocking Valley, and the Ohio & S. W. railroads, 70 m. s.e. of Columbus. The first permanent settlement was made here in 1795, as a trading post on the routes from the Ohio river to the settlements which were then starting up in the territory of the northwest. The place soon

became quite an important centre, but as the settlements extended further away its growth was checked, so that it was not incorporated as a city until 1847. It is situated in the midst of a coal and iron-mining section, and the entire region of country by which it is surrounded is very rich agriculturally. It has a number of industrial establishments, such as foundries, machine-shops, furnaces, woolen mills, lumber yards, a tannery, and coal and iron-ore mines. Pop. (1910) 5,468.

JACKSON, Tenn.: city and cap. of Madison co., on the south fork of Forked Deer river, and on the Illinois Central, Mobile & Ohio, and Nashville, C. & St. L. railroads. It is the trade centre of a large and fruitful agricultural region, an important cotton market, and it has manufactories of engines and boilers, cotton goods, lumber, machinery, flour, furniture, trunks, spokes and skewers, plows, carriages, bricks, cotton-seed oil, etc. It is also a noted educational centre, having in addition to its excellent public schools, the Southwestern Baptist Univ., the Memphis Conference Female Institute, the Lane Univ. and a Carnegie Public Library. The water-works and electric light system are owned by the city, and there are 5 banks with a combined capital of more than $400,000. It was an important centre of military operations during the Civil War, General Grant having occupied it on several occasions as his headquarters; and on the 19th of Dec., 1862, a battle of some importance took place here between a force of Confederate cavalry under General Forrest and Union detachments of cavalry and infantry under Col. Engelmann of the 43d Illinois regt. On the 13th of July, 1863, the place was attacked by a Union force, and the Confederates were driven from the town with a loss of 38 killed and 150 wounded. Pop. (1910) 15,779.

JACKSON, Abraham Valentine William, American Indo-Iranian scholar: 1862, Feb. 9, b. New York. Graduated from Columbia in 1883, he was Fellow in letters there (1883–6), instructor in Anglo-Saxon and the Iranian languages (1887–90), and, after study at Halle (1887–9), adjunct professor of English language and literature (1891–5). In 1895 he was appointed professor of Indo-Iranian languages at Columbia. By way of recognition of the instruction given by him in their ancient books, the Parsees made to the Columbia library the gift of an important manuscript collection of Zoroastrian works. He appeared also as a public lecturer, became one of the directors of the American Oriental Society, and in addition to numerous contributions to the *Journal* of that society and other learned periodicals, wrote: *A Hymn of Zoroaster, Yasna XXXI.* (1888); *An Avestan Grammar* (1892); *An Avestan Reader* (1893); *Zoroaster, the Prophet of Ancient Iran* (1899); *Persia, Past and Present* (1906); and has edited *A History of India* (9 vols., 1906–7); etc.

JACKSON, Andrew, ll. d.: 7th president of the United States: 1767, Mar. 15—1845, June 8; b. Waxhaw Settlement, Union co., N. C. He was son of Andrew Jackson, who emigrated from Carrickfergus, Ireland, 1765, and Elizabeth Hutchinson. The men of the families cultivated small farms and the women were generally weavers of linen. His education was extremely limited, because of his fondness for active life and the vigorous sports of the pioneer days. Reading, writing and ciphering were taught to pupils seated on benches made of rough slabs, by teachers none too well fitted for such work. At a very early age he began his military career. In 1780, with his brother Robert, he was present at Sumter's disastrous fight at Hanging Rock; and in 1781, they were captured, taken prisoners to Camden, and subjected to brutal treatment by British officers, till the mother secured the exchange of her sons. The same year his mother and brother died, and he was left destitute and friendless. Jackson's life immediately after the close of the war was reckless and thoughtless, but at the age of eighteen he began studying law with Spruce McCay in Salisbury, N. C. The following year he was admitted to the bar. In 1788 he removed to Nashville, then in western N. C., and was appointed public prosecutor for the district; 1790, when Tenn. was made a territory, President Washington appointed him U. S. attorney for the district: and 1791 his prospects warranted his marriage, which he contracted with Mrs. Rachel Donelson Robards, under the belief that she had been divorced legally from her first husband. The divorce, however, was not completed till late in 1793; and 1794, Jan., Jackson had a second and legal ceremony performed. This incident furnished his enemies material for aspersing his character, but there was never a doubt of his blamelessness in this affair among those familiar with the fact or those to whom the evidences of his sincerity were submitted. As public prosecutor and U. S. attorney he was indefatigable, fearless, honest: wrongdoers were overawed by him, and the Indians who had long been the scourge of the district tested his bravery and concluded that he had a charmed life. He prospered with the general improvement of the terr., became widely known as a man of public affairs, and when Tenn. terr. became a state, 1796, June 1, it was natural that he should be chosen a member of the convention to frame the first state constitution. In that body he was one of the most conspicuous figures, and his rare directing and executive abilities were constantly employed and appreciated. At the conclusion of the convention's work, Jackson was elected the first representative of the new state in congress, and after serving through one session, in which he opposed Jay's treaty with Great Britain and Hamilton's financial policy, and urged the completion of the frigates *Constitution*, *Constellation*, and *United States*, then on the stocks, and a cessation of further blackmail payments to Algiers, he was elected U. S. senator to fill a vacancy. He occupied

his seat in the senate during the winter 1797–8, resigning in April, 1798, after which he was elected judge of the Tenn. supreme court. In 1801 he was elected maj.gen. of state militia; 1803 was unsuccessful applicant for appointment as first gov. of the newly acquired terr. of La.; and 1804 resigned his judgeship and retired from public life in order to apply himself to the restoration of his crippled financial affairs. He established himself on a plantation near Nashville which he called 'The Hermitage,' erected a cottongin, and began trading in New Orleans by flat-boat. While engaged thus in business Jackson was visited by Aaron Burr, 1805, and again 1806, who endeavored to gain Jackson's interest in his scheme for establishing a republic or empire in the s. or s.w. with New Orleans for its ultimate capital. Jackson at first received Burr cordially, but afterward suspecting his integrity, warned Gov. Claiborne of La. Terr. of Burr's intentions and tendered President Jefferson the services of the state militia to suppress any overt act of treason. After Burr was formally charged by the pres. with treason, Jackson received orders from the govt. to hold his command in readiness for prompt action. Though he had first communicated the warning to the govt., placed himself and troops at the service of the federal authorities, and exerted himself with accustomed vigor to obey President Jefferson's orders, there were many who questioned his loyalty and believed him leagued with Burr.

Immediately after the declaration of war against Great Britain 1812, Jackson volunteered his services and those of 2,500 men; but it was not till late in the year and after the reverses to the Americans in the n.w. that he was called into the field. A fear that the British might attempt the capture of New Orleans led the govt. to order him to that point, and he started at the head of his militia 1813, Jan. The next month the new sec. of war directd him to disband his troops. Full of wrath for what he considered the incompetency of the war dept., he marched his men back to Tenn. and there released them from the special service. On Aug. 30 occurred the massacre of 400 refugee settlers by a force of 1,000 Creek Indians at Fort Mimms in s. Ala. As soon as the news reached Nashville, Jackson, though suffering from a wound received in a duel with Thomas H. Benton, gathered a force of 2,500 volunteers, started after the Indians, defeated them at Talluschatches and Talladega, and 1814, Mar. 27, after being reinforced by a regt. of U. S. inf., gained a decisive victory over them at the Horse-shoe bend of the Tallapoosa river, known also as Tohopeka. For his victory over the Indians, which had an important bearing on the future conduct of the war, he was appointed by President Harrison 1814, May 31, maj.gen. in the regular army and given command of the milit. dept. of the south. In Aug. he seized Mobile, then claimed by both Spain and the United States, established headquarters there, and while seeking permission to attack the British at Pensacola was himself

attacked by them at Mobile. He defeated them disastrously at his outer works, pursued them in retreat to Pensacola, stormed the town Nov. 7, and was planning an attack on Fort Barrancas—with which he hoped to capture the British fleet—when the enemy blew up the fort and hastily retreated. This expulsion of the British from Fla., where Spain had permitted them to establish their base of operations, left Jackson free to apply his whole energy to the defense of New Orleans. He reached the city Dec. 2, called out the whole of the state militia, declared martial law, and when the British, who landed their vanguard Dec. 16, had reached a point within 9 m. of the city on the 23d, he at once attacked them with an undisciplined land force and a small party in the schooner *Caroline*, and by preventing an advance on the city really gained the victory of New Orleans on that night. The British commander-in-chief, Sir Edward Pakenham, brother-in-law of the Duke of Wellington, landed on the 25th with reinforcements fresh from Wellington's army in the allied campaign against Napoleon, making the total British force about 12,000. He attacked Jackson on the 28th and was again repulsed, and again 1815, Jan. 1, with similar result. Jackson was reinforced Jan. 1 by 2,250 Ky. militia, nearly all unarmed, and on the 6th Pakenham received an additional force of about 5,000 seamen and marines. Jackson then fell back to a canal 4 m. from the city, and constructed his famous line of fortifications near the Bienvenu and Chalmette plantations, giving him a line on the left bank of the Miss. river about 1 m. long, on which he posted 12 cannon. On Jan. 8, Pakenham led a direct assault upon the whole American line, and in half an hour the British were forced to retreat, leaving their commander dead with 2,600 of their number killed and wounded. The American loss was only 8 killed and 13 wounded. The battle was fought after peace had been signed at Ghent, but neither commander was aware of the fact.

In Apr. following, Jackson was appointed commander-in-chief of the s. div. of the United States, and received the thanks of congress. In 1818, Mar., with a force comprising regular troops, militia from Tenn. and Ga., and friendly Creek. Indians, he began his campaign against the Seminole Indians in Fla., who had perpetrated gross atrocities on white settlers under the alleged inspiration of a horde of adventurers and filibusters. He captured St. Marks, hanged two British subjects and two powerful Indian chiefs, whom he believed guilty of having incited the Indians to hostility against the United States and of having supplied them with the means of war, seized Pensacola, and in three months had the Indians under complete subjection. His execution of the British subjects led to bitter diplomatic correspondence between England and the United States, and his whole campaign was the subject of praise and censure in congress, but his opponents were unable to adopt any report or resolution

adverse to him. In 1819 he made a triumphal tour of the n. Two years after the cession of Fla. by Spain to the United States he was appointed gov. of that terr., but held the office only a few months; and soon afterward was tendered and declined the office of U. S. minister to Mexico. He then determined to retire to his farm for the remainder of his life.

About this time the desire of some of his admirers to bring him before the public as a candidate for the presidency began to assume definite shape. Personally he made light of the project. His friends urged his great popularity, and when the legislature of Tenn. formally nominated him for the office 1822, July 20, he gave probably his first serious thought to the possibility of his candidacy. In 1823 he was elected U. S. senator, and 1824 received the nominations of the federalist and republican conventions for pres. of the United States. The electoral college failed to elect, and the house of representatives chose Adams. Jackson's friends were indignant that the house should thus 'overthrow the manifest will of the people,' and Jackson believed through his life that he had been deprived of the office through a bargain between Clay and Adams, by which the former received the first place in the latter's cabinet. In the ensuing presidential election (1828) he was successful, and John C. Calhoun was re-elected vice-president. His administration was characterized by vigorous proceedings and excitement from the start. It opened with the first national exemplification of 'practical politics,' the removal of officeholders merely because they belonged to the opposite party; and this innovation was followed by quarrels between the vice-pres. and the sec. of state in a struggle for the control of the patronage; by extreme social and political excitement growing out of the marriage of Sec. Eaton (see EATON, MARGARET L.), and by the disruption of the cabinet over the Eaton incident. To these incidents succeeded Jackson's initial attacks on the U. S. bank, his active animosity against Calhoun and his partisans, the nonconfirmation of Van Buren as U. S. minister to England by the senate through Calhoun's negative vote, and the movement of Calhoun's friends in S. C. to nullify the acts of congress establishing a protective tariff.

In 1832 he reconsidered a previous determination to retire to private life at the close of his term of office, accepted a renomination, and in the election was successful. Van Buren was elected vice-pres. by 189 electoral votes, 1832, Nov. 24. About the time of his re-election a convention authorized by the legislature of S. C. declared the tariff act null and void, made it unlawful for the authorities of either the general or state govt. to enforce the payment of duties within that state, and prohibited any appeal to the U. S. supreme court from the decisions of the state courts involving the authority of the ordinance, the validity of acts of the legislature giving effect thereto, or the validity of the congressional tariff act. The convention

further declared that from the passage of the proposed ordinance the state would proceed to organize a separate govt. Dec. 11, Jackson issued a now famous proclamation, defining the rights and duties of the general govt., reviewing the entire situation, and expressing his determination to execute the laws and to preserve the Union by all constitutional means. Congress passed an enforcing act to enable Jackson to execute the laws, and while Henry Clay was seeking to reconcile the hostile factions with his tariff compromise bill Jackson ordered a naval vessel to Charleston to cooperate with the revenue officers if necessary, and instructed Gen. Scott to hold troops in readiness to march into S. C. should any overt act be committed. The operation of the nullifying ordinance was suspended to await the fate of the compromise bill in congress, and when that bill was adopted, the convention was reassembled Mar. 11, and the nullifying ordinance repealed, its promoters claiming the victory. While this controversy was in progress Jackson resumed his attacks upon the U. S. bank. A bill to renew the charter of the bank was passed in both houses of congress 1832, and was vetoed by the pres., and congress failed to pass it over his veto. In 1833 he ordered the removal of all govt. money from the bank, for which he was formally censured by the senate, and the censure lay against him till a few days before his retirement from office, 1837, when the senate expunged it. His persistent fight against the bank led to a reorganization of his cabinet. William J. Duane, Penn., was appointed sec. of the treas.; McLane was transferred to the state dept.; and when Duane refused to remove the govt. deposits from the U. S. bank, Jackson removed him.

The entire administration of Jackson was as remarkable for its vigorous foreign policy as for the number of great events in the domestic history of the country. The extreme fearlessness and independence of his character were always on guard; he was passionate, impulsive, wrathful under opposition; quick in movement; determined in purpose. His powers of command were great; and considering the facts that he was the first pres. from the 'wild west,' and the first who had not received the advantages of a liberal education nor been favored with the accomplishments of polished society, that his official acts provoked the bitterest antagonism, that he never hesitated to adopt extreme measures to compass what he believed to be a public benefit, and that, unlike the majority of his predecessors and successors, he had a wider and deeper popularity when he left office than when he entered it, his two terms as pres. form one of the most singular, effective, and influential periods in our national history. Beyond the events of his administration noted, treaties were concluded with Austria, Turkey, the two Sicilies (by which indemnity to citizens of the United States for commercial depredations by the king of Naples to the amount of $1,720,000 were to be paid), Mexico, and

France (by which under Jackson's threats the sum of $5,000,000 was paid to the United States as indemnity for commercial spoliation by French cruisers during the Napoleonic wars); the Cherokee, Choctaws, and Creek Indians were removed from Ga., Ala., and Miss., to the Indian Terr.; the national debt was extinguished; Ark. and Mich. were admitted into the union; railroads with steam propulsion were introduced; the screw propeller for ocean navigation, agricultural machines, and friction matches were invented; anthracite coal was discovered; the abolitionists first became a moral and political force in the country; the modern daily newspaper was established and the great tide of foreign immigration set in. After his retirement from office 1837, Mar. 4, he returned to 'The Hermitage,' united with the Pres. Church, and spent the remainder of his life as a farmer, loved and believed in by the common people.

JACK'SON, Charles Thomas, M.D.: 1805, June 21—1880, Aug. 29; b. Plymouth, Mass.: scientist. While studying medicine he joined Francis Alger in making a geological and mineralogical survey of Nova Scotia 1827–9; graduated at the medical school of Harvard College 1829; studied medicine and geology in Europe 1829–32; assisted in more than 200 autopsies of cholera victims in Vienna 1831; became acquainted with recent discoveries in electricity and magnetism while in Paris; communicated plans for an electric telegraph to Samuel F. B. Morse 1832; constructed and worked a telegraph line 1834; was appointed state geologist of Me. 1836; established a laboratory in Boston for instruction in analytical chemistry 1838; disputed Morse's claims to the invention of the telegraph 1837–8; was appointed state geologist of Rhode Island 1839; of New Hampshire 1840; planned the geological survey of New York; explored the s. shores of Lake Superior, opened copper mines, and discovered iron mines 1844–5; and was U. S. surveyor of mineral lands in Michigan 1847–9. In the winter 1841–2 he became convinced that surgical operations could be performed painlessly by placing a patient under the influence of perfectly pure sulphuric ether by inhalation, and this form of anæsthesia was first applied successfully 1846. Despite a memorial to congress signed by nearly 200 physicians of Boston and vicinity, crediting the discovery of anæsthesia to Jackson, and the award to him of the Montyon prize by the French Academy of Sciences 'for the discovery of etherization,' the honor of the discovery was claimed by Dr. William T. G. Morton and Dr. Horace Wells, who had studied with him. The controversy continued through the lives of the three claimants, and their friends renewed it after their death. Costly monuments commemorating the discovery have been erected to Drs. Morton and Wells. Jackson received decorations from the govts. of France, Sweden, Turkey, Sardinia, and Prussia; contributed nearly 100 technical papers to the scientific journals of Europe and America, and was a member of the leading learned societies of the

world. Among his many works that on etherization published in 1861 as a *Manual of Etherization, with a History of its Discovery,* is one of the most important. Beside this work and his technical papers he also published several *Reports.*

JACKSON, Edward Payson, American educator and author: b. Erzerum, Turkey, 1840, March 15. He was educated at Amherst College; served in the Union army during the Civil War as private of the 45th and lieutenant of the 5th Massachusetts; was principal and superintendent of various educational institutions, and was master in the Boston Latin School 1877–1905. His works include: *Mathematical Geography* (1873); *A Demigod* (1886), a story published anonymously, and at first attributed to various well-known authors; *The Earth in Space* (1889); and *Character Building* (1892), to which was awarded a prize of $1,000, offered by the American Secular Union, jointly with N. P. Gilman's *The Laws of Daily Conduct* with which it was also published in the volume, *Conduct as a Fine Art* (1894). He also became the editor of *The Bohemian,* a Boston magazine of short fiction.

JACK'SON, Fort—and Fort St. Philip, Capture of: naval battle on the Mississippi river, 1862, Apr. These forts were erected on opposite banks of the Mississippi river at its last great bend, 78 m. below New Orleans, to protect the city against maritime attack. Fort Jackson was a bastioned, case-mated brick-work, rising 25 ft. above the water, on the right bank, built 1824–32, enlarged 1841. Fort St. Philip on the left bank was smaller, had a low brick scarp, was built 1812–15, modified 1841. Together they mounted 115 guns, mostly smooth-bore 32 pounders. Early in 1861 the Confederates seized, strengthened, and garrisoned both forts, and stationed a naval fleet between them and the city. In Dec. following, the federal authorities determined to attempt the reduction of the forts and the capture of New Orleans, and organized a strong naval squadron for the attack and detailed a military force of 15,000 men to occupy the forts and city after capture. Capt. David G. Farragut (q.v.) was assigned to command the squadron, and Gen. Benjamin F. Butler the military force. Ship Island, 100 m. n.e. of the mouths of the Mississippi, was designated the common rendezvous. In 1862, Feb., Capt. Farragut sailed from Hampton Roads in his flagship *Hartford,* reached Ship Island on the 20th, and began preparing for the attack. His force consisted of 6 sloops of war, 16 gun-boats, 21 mortar schooners under Commander David Porter (q.v.), and 5 other vessels, carrying in all more than 200 guns. The mortar-boats made an ineffectual attack on the forts Apr. 18. Farragut held a counsel on the 20th, and determined to run past the forts and attack the Confederate fleet above. At 1:45 on the morning of the 24th the fleet started on its hazardous passage in two columns, each to engage one of the forts *en route,* and all but one vessel succeeded in running the terrific gauntlet, though much damaged. The fleet continued up the river, and on the 25th

silenced the Chalmette batteries, destroyed the Confederate squadron, and at noon had New Orleans at its mercy. Fort J. and Fort St. P. surrendered to Commander Porter Apr. 28, and the troops under Gen. Butler occupied New Orleans May 1. The Union loss was 37 men killed, 147 wounded, and one vessel sunk, the *Varuna*.

JACKSON, Frederick George, English Arctic explorer: b. Alcester, Warwickshire, 1860. He was educated at Denstone College and the University of Edinburgh, made journeys across the Australian deserts and the Great Tundra of Siberia, in 1894–7 was leader of the Jackson-Harmsworth expedition to Franz Josef Land, and during the second Boer war was in command of a company of mounted infantry. During his stay in Franz Josef Land he mapped the region, which he proved to be a collection of islands, and made valuable magnetic and meteorological observations. He was awarded the gold medal of the Paris Geographical Society in 1899, and wrote: *The Great Frozen Land* (1895); *A Thousand Days in the Aretic* (1899).

JACKSON, Gabrielle Emilie Snow, American writer for young people: b. New York 1861, Oct. 13. Among her many publications are *Denise and Ned Toodles* (1897); *The Colburn Prize* (1901); *Pretty Polly Perkins* (1900); *Laddie and Lassie* (1900); *Caps and Capers* (1901); *Doughnuts and Diplomas* (1902); *Little Miss Sunshine* (1902); *A Blue Grass Beauty* (1903); *Don'ts for Mothers* (1903); *The Three Graces* (1903); *Three Graces at College* (1904); *Mother and Daughter* (1905); *Adventures of Tommy Post-office* (1905); *Little Miss Cricket* (1905); *Wee Winkles and Widewake* (1905); *The Dawn of Womanhood* (1907); etc.

JACKSON, George Anson, American Congregational clergyman: b. North Adams, Mass., 1846, March 17. He was graduated from Yale in 1868, from the Andover Theological Seminary in 1871, was ordained to the Congregational ministry, and in 1872–97 held pastorates successively at Leavenworth, Kan., Southbridge, Mass., and Swampscott, Mass. In 1897 he became librarian of the General Theological Library of Boston. He wrote: *The Apostolic Fathers* (1879); *Fathers of the Third Century* (1881); *Post-Nicene Greek Fathers* (1883); *Post-Nicene Latin Fathers* (1883); *The Son of a Prophet* (1894), a historical novel; *The Ladye Susan* (1904), a poem.

JACK'SON, Helen Maria Fiske (Hunt): 1831, Oct. 18–1885, Aug. 12; b. Amherst, Mass.; author. She was a daughter of Prof. Nathan W. Fiske, was educated in the Ipswich Female Seminary, Mass., married Maj. Edward B. Hunt, U. S. engineer corps (1822–63) 1852,

Oct., and William S. Jackson of Colorado Springs 1875, Oct., and was appointed by the pres. a special commissioner to investigate the condition of the 'Mission' Indians in Cal. 1883. Prior to her second marriage she had gained distinction as a contributor to periodical literature as 'H. H.,' and after removing to Colo. she made a special study of the history of early Spanish missions and of the treatment of American Indians by the federal govt. Her *Century of Dishonor* (New York 1881) was a strong arraignment of the govt. for its Indian policy and led to her appointment as commissioner. She lived to publish but one work after investigating the condition of the 'Mission' Indians, *Ramona* (1884), another plea for just treatment. Her publications include *Verses* (1870, enlarged ed. 1874); *Bits of Travel* (1872); *Bits of Talk about Home Matters* (1873); *Bits of Talk for Young People* (1876); *Mercy Philbrick's Choice* (1876); *Hetty's Strange History* (1877); *Bits of Travel at Home* (1878); *Nelly's Silver Mine* (1878); *The Story of Boon* (1879); *Letters from a Cat* (1880); *Mammy Tittleback and her Family* (1881; *The Training of Children* (1882); *The Hunter Cats of Connorloa* (1884); and (posthumous) *Glimpses of Three Coasts, Sonnets and Lyrics,* and *Zeph* (1886); and *Between Whiles* (1887).

JACKSON, Henry Rootes, American diplomat and soldier: b. Athens, Ga., 1820, June 24: d. Savannah, Ga., 1898, May 23. He was graduated at Yale in 1839, admitted to the bar in Georgia and for several years was district attorney. He served in the Mexican War, became judge of the superior court, and in 1853 went to Vienna as *chargé d'affaires,* and the following year was made minister resident there. Before the outbreak of the Civil War he seceded from the Charleston Convention and, when his state seceded, commanded the State troops. He eventually resigned, and joined the Confederate forces. Near the close of the war he was made a brigadier-general in Hood's army and was captured with his whole command at Nashville after the battle of Franklin. In 1885 he was appointed United States minister to Mexico. He was the author of *Tallulah, and Other Poems* (1850).

JACKSON, Howell Edmunds, American jurist: b. Paris, Tenn., 1832, April 8: d. West Meade, Tenn., 1895, Aug. 8. He was graduated from the University of Virginia in 1854, from the law department of Cumberland University in 1856, began practice in Jackson, and later in Memphis, and upon the organization of the Confederate government became receiver for property in West Tennessee confiscated to the purposes of the Confederacy. Subsequent to the war he became a member of the court of referees of Tennessee, a tribunal which acted as a provisional supreme court in the hearing of cases that had arisen during the war

period. Elected to the State legislature in 1880, he took his seat in the United States Senate in 1881, afterward left the Senate to become United States circuit court judge for the West Tennessee district, and in 1893 was appointed an associate justice in the United States Supreme Court.

JACK'SON, James: 1757, Sep. 21—1806, Mar. 16; b. Moreton-Hampstead, England: soldier. He removed to Savannah 1772, studied law, joined the patriots in repelling the British from Savannah 1776, Mar., commanded a company till Gen. Howard's expedition to Florida, was appointed brigade maj. of Georgia militia 1778, took part in the defense of Savannah and after its capture joined Gen. Moultrie in South Carolina, narrowly escaping execution as a spy while *en route;* killed Lieut. Gov. Wells and was himself wounded in a duel 1780, Mar., served with Col. Elijah Clark and Gens. Sumter and Pickens 1780–1, commanded the legionary corps of Georgia 1781, and received the keys of Savannah on the evacuation of the city by the British 1782, July 12. After the war the state presented him a residence in Savannah for his milit. services. He was appointed brig. gen. 1786, elected gov. but declined to serve 1788, was member of congress 1789–91, U. S. senator 1793–95 when he resigned, governor 1798–1801, and U. S. senator from 1801, Dec. 7, till his death.

JACK'SON, James, M. D., LL. D.: 1777, Oct. 3—1867, Aug. 27; b. Newburyport, Mass.: physician and author. He graduated at Harvard College 1796, studied medicine in Salem and London, began practicing in Boston 1880, aided Dr. Warren in establishing the Massachusetts General Hospital in Boston, and became its first physician, was elected prof. of chemical medicine in the Massachusetts Medical School (afterward the medical dept. of Harvard Univ.) 1810, professor of theory and practice 1812, and professor emeritus 1835. He was president of the Massachusetts Medical Society several years, and a frequent contributor to medical and surgical periodicals. His publications include *On the Brunonian System* (1809); *On the Medical Effects of Dentition* (1812); *Eulogy on Dr. John Warren* (1815); *Syllabus of Lectures* (1816); *Text-book of Lectures* (1825–27); *Memoir of James Jackson, Jr.* (1835); and *Letters to a Young Physician* (1855).

JACK'SON, Patrick Tracy: 1780, Aug. 14—1847, Sep. 12; b. Newburyport, Mass.: merchant. He was educated in mercantile business; established himself in the India trade in Boston; joined his brother-in-law, Francis C. Lowell, in designing a model for a power-loom for manufacturing cotton, from which Paul Moody constructed the first machine of that kind made or used in the United States 1812; built in Waltham the

"STONEWALL" JACKSON

first mill that produced finished cloth from raw cotton 1813; built several mills on the Merrimack river, organized the Merrimack Mfg. Co., and founded a settlement that became the city of Lowell; obtained its charter and superintended the construction of the railroad between Boston and Lowell (completed 1835); and actively promoted the moral and intellectual welfare of his numerous employés.

JACKSON, Samuel Macauley, d. d., ll. d. American church historian: b. New York, 1851, June 19. He was graduated from the College of the City of New York in 1870, from the Union Theological Seminary in 1873, and after further study at Leipsic (1873–6), held the pastorate of the Presbyterian Church at Norwood, N. J., in 1876–80. In 1895 he became professor of church history in New York University. He was assistant editor of Schaff's *Bible Dictionary* in 1878–80, associate and managing editor of the *Encyclopædia of Religious Knowledge* in 1880–4, and edited *A Concise Dictionary of Religious Knowledge* (1891). He also prepared the first important bibliography of foreign missions (1891), wrote *Huldreich Zwingli* (1901), the first original English biography of its subject, and was chosen secretary of the church history section of the American Historical Association.

JACKSON, Sheldon, d. d., ll. d., American educator: b. Minaville, N. Y., 1834, May 18. He was graduated at Union College in 1855, at Princeton Theological Seminary in 1858; was ordained to the ministry of the Presbyterian Church in the latter year; and was missionary to Western Wisconsin and Southern Minnesota in 1859–69. In 1869–82 he was superintendent of Presbyterian missions in western Iowa, Nebraska, the Rocky Mountain territories, Wyoming, Colorado, New Mexico, Arizona, Utah, and Montana, and from 1877 in Alaska. In 1855 he became United States general agent of education in Alaska, and in 1887 organized the Alaskan society of natural history and ethnology at Sitka. He aided in founding a Christian college in Utah in 1896, was moderator of the Presbyterian General Assembly in 1897, and wrote: *Alaska and Missions on the North Pacific Coast* (1880); *Education in Alaska* (1881); annual reports on *Education in Alaska* from 1886; and annual reports on the *Introduction of Domestic Reindeer into Alaska* (1891–1901).

JACK'SON, Thomas, d. d.: 1783, Dec. 12—1873, Mar. 11, b. Sancton, Yorkshire, England: Meth. minister and author. He learned the carpenter's trade when a boy, became an itinerant preacher in the Wesleyan connection 1804, labored in Lincolnshire, Lancashire, Yorkshire, and London till 1824, was then chosen connectional editor of the Wesleyan Church by the British conference, and was also tutor in the

Richmond Theol. Institution from 1833 till his resignation from old age 1861. His publications include *Centenary of Methodism* (London 1839); *Library of Christian Biography*, 12 vols. (1837–50); *Life of Charles Wesley and Contemporary Events*, 2 vols. (1841); *Journal of Charles Wesley*, 2 vols. (1849); *Lives of Early Methodists*, 3 vols. (1849); *Duties of Christianity* (1857); *Providence of God viewed in the Light of Scripture* (1862); and *Curiosities of Pulpit Literature* (1868).

JACKSON, Thomas Graham, English architect: b. Hampstead 1835, Dec. 21. He was educated at Oxford University and became the pupil of Sir George Gilbert Scott (q.v.) (1858–61), making a specialty of the Gothic style. He has designed most of the new buildings in Oxford, Cambridge, Eton, Westminster School, Rugby, Harrow, etc., and has restored Great Malvern Priory and Bath Abbey, besides building many new Gothic churches. He has written: *Modern Gothic Architecture* (1873); *Wadham College, Oxford; its History and Buldings* (1893); *The Chureh of St. Mary the Virgin, Oxford: its History and Architecture.*

JACK'SON, Thomas Jonathan (Stonewall Jackson): 1824, Jan. 21—1863, May 10; b. Clarksburg, W. Va.: soldier. He was brought up on his uncle's farm; entered the U. S. Milit. Acad. 1842, and graduated without distinction 1846; was assigned to the 1st U. S. artillery as brevet 2d lieutenant, and ordered to Mexico, where he was attached to Magruder's battery of light artillery, served through the war and won the brevets of capt. and maj. for gallantry at Vera Cruz, Cerro Gordo, Contreras, Molino del Rey, Chapultepec, Churubusco and the city of Mexico; and was promoted 1st lieutenant 1847, Aug. 20. In 1851 he was elected professor of philosophy and artillery tactics in the Virginia State Military Institute, and resigned from the army to accept the office 1852, Feb. 29. He retained this office till the secession of Virginia 1861, Apr. 17, when Governor Letcher appointed him colonel of militia, and assigned him to command a force detailed to seize and occupy the U. S. arsenal at Harper's Ferry, in which he was successful May 3. On the organization of the army of Virginia, Gen. Joseph E. Johnston was appointed to the command, and Jackson was given the brigade of 'Valley Virginians,' the nucleus of the famous 'Stonewall brigade.' With this command he entered the first Bull Run battle, known to the Confederates as the first Manassas, and was the first to check the progress of the Union army after it had turned the Confederate line. There was a general rally of the Confederates on his line at a critical moment, and the imminent disaster to the Confederate army was speedily turned to victory. For his service on this field he was promoted major general September, and assigned to

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command in the lower Shenadoah valley, then threatened by a Union army, November. Early in 1862, Mar., Gen. Banks with 5,000 troops marched against his position at Winchester from the Potomac, and Jackson, under instructions not to risk his army of 3,400 men, retreated with Banks in pursuit as far as Strasburg. When Banks returned to Winchester and began sending his troops elsewhere, Jackson made a forced march toward his old position, and encountered the Union army at Kernstown, Mar. 23. A vigorous engagement ensued, in which the Confederates were defeated, but Banks, not appreciating the situation, returned to the valley, leaving Jackson to retire up the Shenandoah and establish himself in the Blue Ridge Mountains near Swift Run Gap. About a month later Banks was at Harrisonburg with 20,000 men, Fremont was moving toward Staunton with 15,000 men, McDowell was on the Rappahannock threatening Richmond with 30,000 men, and McClellan was advancing up the peninsula toward the Confederate capital. To add to the perils of Jackson's army, a Union force under Gen. Milroy was discovered marching across the mountains from the w. for the purpose of uniting with Banks, then seeking another engagement with Jackson. At this juncture Jackson was placed in command of all the Confederate troops in n. Virginia, Gen. Ewell with 8,000 men was ordered to his relief, and Gen. Edward Johnson with 3,000 men hastened toward Staunton, where the right of Fremont's line was supposed to be in position. Jackson then had about 19,000 men under him. Ordering Ewell to hold Banks, Jackson joined Johnson, and by a sudden and circuitous march struck Milroy's command in the village of McDowell, May 8, and after 4 hours fight defeated it. He then returned to the valley, joined Ewell's column, marched day and night through the Luray valley, surprised Banks at Front Royal May 23, defeated him at Winchester May 25, and drove him beyond the Potomac. These actions placed 2,300 prisoners and more than 9,000 stands of arms in Jackson's hands. While he was striving to send his captures to the rear, the Federal authorities summoned McDowell from Fredericksburg and Fremont from West Virginia, to attack his rear, and Banks and Sigel to move down upon him from the Potomac. On May 30 Jackson was at Winchester apparently surrounded. The next morning he marched rapidly to Strasburg, between the positions of McDowell and Fremont, held both armies at bay till his prisoners and captured stores were well in the rear, then detaching Ewell to hold Fremont, he retreated up the valley to the White House, burned the bridge there, passed around Shield's division of McDowell's army which had pursued him, and established himself at Port Republic, between Shields and Banks, and near Ewell. On June 8 Ewell engaged Banks at Cross Keys

and defeated him, and June 9 Jackson defeated Shields, who had advanced on Port Republic, before Fremont could come to his assistance. After this the Union troops retreated to the lower Shenandoah, while Jackson hastened to join Lee for an attack on McClellan near Richmond. On June 27 he executed a flank movement and struck McClellan's right at Cold Harbor (Gaines' Mills), and was afterward detached by Lee and ordered to advance to check the Union army under Gen. Pope, then hastening along the Piedmont region to the Rapidan, while Lee watched McClellan. Jackson crossed the Rapidan Aug. 9, defeated Banks at Cedar Run, and, being joined by Longstreet's corps, was ordered Aug. 25 with 25,000 men to pass Pope's right flank, sieze the depot at Manassas, and break up his communications. When they met Aug. 29, both armies fought desperately, but Jackson held his ground until Lee arrived with the main Confederate army and accomplished the defeat of Pope Aug. 30 in the second Bull Run or Manassas battle. On Sep. 15 Jackson captured Harper's Ferry with 13,000 prisoners and 70 cannon, reached Sharpsburg the next day, and on the 17th commanded the left wing of the Confederate army in the battle of Antietam. On Dec. 13 he commanded the Confederate right in Burnside's attack on Lee at Fredericksburg, repelled the attack of the Union division under Gen. Franklin, and was promoted lieut. general. 1863, May 1, he offered battle to Gen. Hooker, whom he encountered coming from the Chancellorsville wilderness, and when the latter retreated into the wilderness, he made a forced flank movement around the right of the Union army, and late in the following evening encountered and attacked Gen. O. O. Howard's corps (Hooker's right) on the old turnpike. He defeated Howard in half an hour, and then the movement of his own army was suddenly checked by a combined cavalry and artillery maneuver planned by Gen. Alfred Pleasanton. Shortly afterward Jackson rode beyond his lines to reconnoitre, and his escort being mistaken for Union cavalry, was fired upon by his own men. He received 3 bullets, lost his left arm by amputation, and was doing well when pneumonia supervened May 7, and caused his death three days afterward. English admirers caused a bronze statue of Jackson to be erected in Richmond 1875. Jackson was a man of great devoutness, and of stern moral principle.

JACKSON, WILLIAM: 1730, May—1803, July 12; b. Exeter, England: composer. He studied music with Silvester, organist of Exeter Cathedral, and Travers, organist of King's Chapel, London; became a teacher of music and subchanter in the cathedral on his return to Exeter; and was appointed organist, lay-vicar, and master of the choristers of the cathedral 1777. He composed numerous songs, canzonets, and trios that became very

popular; published the dramatic pieces *Lycidas* (1767), *The Lord of the Manor* (1780); and *The Metamorphoses*, comic opera (1783); and was author of *Thirty Letters on Various Subjects* (1782), *Observations on the Present State of Music in London* (1791), and *The Four Ages, together with Essays on Various Subjects* (1798).

JACKSONVILLE, *jăk'sŏn-vĭl*, Florida: chief city of the state and capital of Duval co., on the w. bank of the St. John's river, 24 m. from the ocean by water and 14 on a direct line. It is one of the principal railroad centres of the south, six main lines converging here, three of which are trunk lines. It is also connected with all the Atlantic coast cities by the Clyde, Mallory, and Ocean Steamship lines, and with the picturesque St. John's river and its tributaries by six daily and tri-weekly lines of steamers. The mild and healthful climate, both in summer and winter, makes Jacksonville a favorite resort, and from 50,000 to 60,000 visitors make annual tours there. The place was settled in 1816, by Lewis Z. Hogans, from whom was derived the name of the creek which flows through the city. 1822 it was laid out and named for Andrew Jackson, in honor of his having been the first Territorial Governor of Florida. The city was incorporated in 1833, but its development was retarded by the Seminole war. A revival occurred in 1842, and the city has had a steady growth ever since. It is a great shipping point for the exports of Florida, and does a very large business in lumber, railway ties, shingles, turpentine, resin and resin-oil, cotton and its various products, garden vegetables, and a great variety of semi-tropical fruits. The largest ostrich farm in the United States, and the only one east of California, is located in a suburb of the city. Its annual trade exceeds $75,000,000, which necessarily requires ample banking facilities. These are supplied by two national and three state banks, and a savings bank, with a combined capital of nearly $1,500,000. The river in front of the city forms a magnificent estuary, with a channel deep enough for the largest ocean vessels; but until recently the shallow channel across the bar at the mouth of the river prevented the larger class of vessels from entering. Now, however, through the combined efforts of the national and municipal governments, there is a channel of 24 feet, and the city has an unobstructed water-front of more than 7 miles. On the 3d of May, 1901, it was almost obliterated by fire, the losses exceeding $15,000,000; but with astonishing energy the citizens set about rebuilding, and before the end of 1903 they had erected 1,000 new buildings in excess of the number destroyed, and of a much better quality. Among the finest buildings are the Union station, United States post-office and custom-house, Masonic Temple, St. Luke's hospital, National Bank of Jacksonville (which were spared by the fire). Among the public buildings since

erected are the Windsor hotel, Seminole, Elks, Woman's and Wheelmen's clubhouses, Mercantile Exchange Bank, Board of Trade, Duval High School and a $50,000 Carnegie library. The education al and religious interests are well supplied with handsome buildings and churches; and there is a free Carnegie library. There are 5 parks, embracing an aggregate of 57 acres; and the ocean beaches, 18 to 20 m. distant are the finest in the world. Previous to the epidemic of 1888 the city nad suffered much from repeated visits of yellow fever, but following that a thorough system of modern sewerage was instituted, the surrounding swampy districts were drained or filled, and a number of artesian wells were bored, from which chemically pure water is drawn for the city's use. These improvements resulted in reducing the death rate to 10 per 1,000, which is one of the lowest in the country. There are 20 m. of trolley tracks, and the city owns the electric light plant and waterworks. There is no floating debt, and the tax rate is 16.02 mills on the dollar, or 11 mills if beyond the hydrants. Pop. (1910) 57,699.

JACKSONVILLE, Ill.: city, cap. of Morgan co., on Mauvaisterre creek, a tributary of Illinois river, and on branches of the Wabash, the Chicago & Alton, the Burlington, the Chicago P. & St. L., and the J. & St. L. railroads, the latter being a part of the Burlington system. J. was laid out as early as 1825, about seven years after the admission of the state into the Union, established as a town in 1840, and incorporated as a city in 1867. It is noted for its institutions of learning, and its wide, well shaded streets and handsome residences. Illinois College, the oldest in the state, is located here, having been founded through the efforts of local residents and a band of students from Yale College. It was originally non-sectarian, but recently became Presbyterian, absorbed the Jacksonville Female Academy, and became affiliated with the Univ. of Chicago. Among the other institutions are, the Illinois Woman's College,, established in 1847 under the auspices of the Methodist Episcopal Church; the State Central Hospital for the Insane, and the State Schools for the blind and dumb; Our Savior's Hospital in charge of the Sisters of the Holy Cross; the Passavant Memorial Hospital; a Carnegie Free Public Library, etc. Among the industrial establishments are woolen mills, machine shop products, brick factories, paper and flour mills, candy factories, the car shops of the Chicago Peoria & St. Louis railroad, etc. The city-hall, the court-house, and the high school are the most prominent public buildings. Besides these, there are numerous church edifices, the most attractive of which is the Westminster Presbyterian. The executive head of the city government is a mayor, who holds office for two years, and a city council composed of 12 members elected for two years by the four

wards. The mayor appoints the administrative officials, subject to confirmation by the council. The city owns and operates the electric light plant and the water-works. Pop. (1910) 15,326.

JACOB, *jā'kob* [Heb. *Yaakob*, meaning, according to Gen. xxv. 26, and xxvii. 36, 'one who seizes the heel,' or 'supplants'] ; later called also ISRAEL: one of the three chief Hebrew patriarchs: second son of Isaac and Rebekah and on account of his docile, domestic character the favorite of his mother. His conduct toward his brother Esau in regard to the birthright (Gen. xxvii.) shows his original character as crafty, selfish, and deceitful. The Divine discipline dealt with him for many years with afflictions which were in the line of his sins. After an exile of 21 years in Padanaram, whither he had fled to escape the vengeance of Esau, he returned to Canaan with two wives (Rachel and Leah), two concubines (Bilhah and Zilpah), 12 sons (fathers of the subsequent Hebrew tribes), and a daughter named Dinah, who was the unintentional cause of a vindictive massacre of the Shechemites by her brothers Simeon and Levi. In his 130th year, he and his family went down to Egypt, where his favorite son Joseph had become a great man under Pharaoh. Here he lived 17 years longer in the land of Goshen, and died in his 147th year. His body was embalmed, carried back to Canaan with great state by his sons, and there buried near Hebron.

JA'COB OF EDES'SA: one of the most eminent scholars of the 7th c., born in 'Indaba near Antioch, educated in Alexandria, appointed bp. of Edessa 684, and often confounded with Jacob Baradæus, also called Zanzalus, founder of the sect of Jacobites and likewise bp. of Edessa. J. resigned his see 688 on account of disagreements with his clergy, spent 20 years in the monasteries of Eusebona and Tell'eda, and consented to resume office on the death of his successor, but died on his way to Edessa, 708, June 5. During his monastery life he applied himself to sacred and classical study, corrected the Syriac version of the Old Test., translated numerous Greek words into Syriac, learned the Syriac, Greek and Hebrew languages; and prepared a Syriac grammar, besides works on theology, philosophy and history.

JA'COB OF HUN'GARY (THE MASTER) : organizer of a religious movement in France to secure the liberation of King Louis IX., who had been captured by Mussulmans in Egypt 1244, while leading the 7th crusade. Jacob, claiming divine inspiration and preaching through the provinces, gathered 30,000 shepherds and peasants in Flanders, secured arms in Amiens, and entered Paris at the head of a mob of 100,000 men. There Jacob assumed sacerdotal functions in the Church of St. Eustache, while his followers committed barbarous excesses, till he sent them in several bands and by different

routes toward the Holy Land. He was killed by order of the queen while haranguing a crowd of his followers, all of whom soon afterward disappeared from public view.

JACOBEAN, n. *jăk-o-bē'an* or JACOBIAN, n. *jă-kō'bĭ-an* [L. *Jacobus*, James]: in *arch.*, term sometimes applied to the style of architecture prevailing during the later years of the reign of Elizabeth and that of James I. It differs from the Elizabethan or Tudor style, in having a greater mixture of Italian, largely owing to the influence of the Italian architect Palladio.

JACOBI, *ja-kō'bĭ*, Ger. *yâ-kō'bē*, ABRAHAM, M. D.: physician and author: b. Hartum, Westphalia, Germany, 1830, May 6. He was educated in the universities of Greifswald, Göttingen, and Bonn, received his degree from Bonn 1851, was connected with the radical movement of that period, and was convicted of treason the same year and imprisoned till 1853, when he came to the United States and settled in New York. He was professor of diseases of children in the New York Medical College, 1861–70, and in the medical dept. of the Univ. of the city of New York, 1867–70, became clinical professor of the same branch in the College of Physicians and Surgeons 1870 and emeritus since 1902, was elected pres. of the New York Pathological, New York Obstetrical, County Medical, and State Medical (1882) Socs., and the New York Acad. of Medicine 1885, and has for many years been visiting physician to the German hospital, Mount Sinai hospital, Hebrew orphan asylum, and the Infant's hospital. His publications include *Contributions to Midwifery and Diseases of Women and Children* (New York 1859); *Dentition and its Derangements* (1862); *The Raising and Education of Abandoned Children in Europe* (1870); *Infant Diet* (1874); and *Treatise on Diphtheria* (1880); *Infant Hygiene; Therapeutics of Infaney and Childhood; Intestinal Diseases;* besides many articles in medical journals and other publications.

JACOBI, *yâ-kō'bē*, FRIEDRICH HEINRICH: 1743, Jan. 25—1819, Mar. 10; b. Düsseldorf: German philosopher. He was educated at Frankfort, whence he went to Geneva to prepare himself for a mercantile career. In 1770, he was appointed councilor of finance for the duchies of Berg and Jülich, and having married a lady of fortune, applied himself to literary pursuits. In 1804, he removed to Munich, where he had been appointed a member of the newly instituted Acad. of Sciences, of which he became president 1807. His writings consist partly of romances, and partly of philosophical treatises. The principal are *Woldemar* (2 vols. Flensb. 1779), *Eduard Allwill's Briefsammlung* (Bresl. 1781), both philosophical romances; *Ueber die Lehre des Spinoza in Briefen an Mendelssohn* (Bresl. 1785), a polemic against logical

methods of speculation in the search after the higher class of moral truths; and *David Hume über den Glauben, oder Idealismus und Realismus* (Bresl. 1787), in which the same polemic is continued, but in which an attempt is also made to demonstrate that the mind or nature of man possesses another faculty—viz., faith, or moral intuition, by which the higher truths are as firmly grasped, as, by faith in the perceptions of the senses we, so to speak, lay hold on the phenomena of the material world. Herein lies the difference between Kant (and indeed the whole school of German idealists) and Jacobi; the former appear to admit only the 'subjective' reality of such conceptions as God, the soul, immortality, etc.; the latter claims for them an 'objective' reality. Kant denies that the 'faculty of faith' gives us 'knowledge,' in the strict sense of the word; Jacobi affirms that it does. One of his treatises, *Von den göttlichen Dingen and ihrer Offenbarung* (Leip. 1811), was the occasion of a rather sharp controversy between him and Schelling. Jacobi was not a systematic thinker, and did not form a school. He varied sometimes in his use of such terms as reason, revelation, belief. In his scheme appear the germs of principles afterwards developed in Sir William Hamilton's philosophy. Jacobi's weakness is in his denial that external things are known to man by an immediate perception in which there is a combination of intuition and belief. He was, as might be expected, deficient in the qualities that he despised—method and logical sequence; but his style is remarkably good, possessing both warmth and clearness. It has been compared by his countrymen to that of Plato. His collected works appeared at Leipsic (6 vols. 1812–20).

JACOBI, Herman Georg Jakob, German Sanskrit scholar: b. Cologne, 1850, Feb. 11. He was educated at Cologne Gymnasium, and later took up a course of studies in Sanskrit and allied languages at the universities of Bonn and Berlin. After spending a year (1872–3) in the Indian office in London on the old Sanskrit manuscripts, he went to India, making a tour of Rajputana. In 1875 he became a docent in Sanskrit at Bonn; from 1876–85 was professor extraordinarius of Sanskrit and Comparative Philology at Münster, Westphalia; in 1885 was made professor ordinarius of Sanskrit at Kiel, Holsatia; and in 1889 was appointed professor of Sanskrit at Bonn. He made a particular study of Jainism and Prâkrit grammar, writing exhaustively on those subjects as well as on the Sanskrit poetical languages. Among the most important of his works are *The Indian Antiquary* and the *Epigraphia Indica*, published in 1892, in which he gives two sets of tables showing the Hindu dates in inscriptions, a work of much value. His other works include: *De Astrologiæ Indicæ, Horâ appellatæ originibus* (1872); *The Kalpasûtra of Bhadra-*

*bâhu* (1879); *The Âyaramgo Sutta of the Cvetâmbra Jains* (1882); *Gaina Sûtras* (1884); *Ausgewählte Erzählungen in Mâhârâshtrî, Zur Einführung in das Studium des Prâhrit* (1886); *The Porisishtaparvan by Hemachandra* (1891); *Sthavirâvalî Charita* (1891); *Das Râmâyana Geschichte und Inhalt, nebst Concordanz der gedruckten Recensionen* (1893); *Kompositum und Nebensatz, Studien über die indogermanische Sprachentwicklung* (1897); etc.

JACOBI, JOHANN GEORG, German poet: b. Düsseldorf, 1740; d. 1814. He was a brother of the philosopher, Friedrich Heinrich Jacobi (q.v.). He was educated at Göttingen and in 1766 was appointed to the chair of philosophy and oratory at the University at Halle. In 1784 he became professor at Freiburg. He edited *Iris* with Gleim (1774–6); and published in 1786 his correspondence with Gleim. An edition of his collected works was published at Zürich in 1882 and his *Ungedruckte Briefe von und an Johann Georg Jacobi* appeared in 1874 edited by Martin.

JACO'BI, KARL GUSTAV JAKOB: 1804, Dec. 10,—1851, Feb. 18, b. Potsdam, Prussia; of Jewish parentage: mathematician. He studied at the Univ. of Berlin, and 1829 became prof. at Königsberg, and published his celebrated work *Fundamenta nova Theoriæ Functionum Ellipticorum*, for which he received the great medal of the Acad. of Sciences of Paris; the work, however, contains only a portion of his researches on Elliptic Functions. In 1842, he with his wife visited England and Scotland. Soon after his return, his health broke down, he started for Italy, and on his return, he was removed from Königsberg to Berlin, where he died of small-pox. Jacobi wrote a great number of memoirs on different branches of higher mathematics, chiefly Series and Definite Intergrals, and was a regular contributor to the celebrated *Journal für reine und angewandte Mathematik* of Crelle.—His brother MORITZ HERMANN JACOBI (1801–74), was distinguished as a civil engineer, and for his inventions and discoveries in telegraphy and electrotyping.

JACO'BI, MARY (PUTNAM), M.D.; b. London, 1842, Aug. 31; d. New York City, 1906, June 10; daughter of George P. Putnam and wife of Dr. Abraham Jacobi. She removed to New York 1848; received a grammar school education; studied medicine in the Woman's Medical College, Philadelphia, and pharmacy in the New York College of Pharmacy, of which she was the first woman graduate; was the first woman admitted to the École de Médecine, Paris (1868), and the first woman graduate (1871); began practicing in New York; married Dr. Abraham Jacobi (q.v.), 1873; was dispensary physician in Mount Sinai hospital 12 years; became prof. of materia medica in the New York Infirm-

ary for Women and Children, and in the New York Post-Graduate Medical School; was elected pres. of the Assoc. for the Adv. of the Med. Education of Women, and received the Boylston prize at Harvard Univ. for her essay on *The Question of Rest for Woman during Menstruation,* 1876; and besides papers in the *Medical Record* and *Journal of Obstetrics,* published *The Value of Life* (New York, 1879), *Cold Pack and Anœmia* (1880), *Studies in Endometritis* (1885), *Infantile Paralysis, Pseudo-Muscular Hypertrophy* and *Hysteria and Other Essays* (1888).

JACOBI, Moritz Hermann, German physicist: b. Potsdam 1801; d. 1874. He was appointed professor of physics at the University of Dorpat in 1835 and while there did important work in scientific research, especially along the line of physics. He was the inventor of new processes in galvano-plastics and electrotyping, and in 1842 was made a member of the Academy of Sciences at Saint Petersburg. The most remarkable and important of his works was an essay published in 1835, *Memoire sur l'application de l'électro-magnetisme au mouvement des machines,* which was shortly afterward in 1840 followed by *Die Galvanoplastik.*

JACOBI, Otto R., Canadian landscape painter: b. Königsberg, Prussia, 1812, Feb. 27. After executing several important water-colors for the crowned heads of Europe, he was appointed court painter at Wiesbaden. In 1860 he came to Canada, where his ability won him membership in 1880 to the Royal Canadian Academy of Art, and in 1890 he was elected president.

JACOBIN, n. *jăk'ō-bin* [from place of meeting in a monastery of the *Jacobins*—from name of church *St. Jacques* at Paris. L. *Jăcōbŭs,* Jacob or James]: *formerly* a friar of the order of St. Domonic.—Name of a party of violent revolutionists in France during the first Revolution; a radical or levelling politician of the character of the French Jacobins (see Jacobins). Jac'obinism, n. *-izm,* the principles of the Jacobins. Jac'obin'ical, a. *-i-kăl,* having the character of a Jacobin.

JACOBINS, *jăk'ō-bĭnz,* F. *zhâ-kŭh-băng:* members of a political club which had very great influence during the French Revolution. It was originally called the *Club Breton,* and was formed at Versailles, when States-general assembled there 1789. It then consisted exclusively of members of the States-general, all more or less liberal or revolutionary, but of very different shades of opinion. On the removal of the court and national assembly to Paris, this club began to acquire importance. It now met in a hall of the former Jacobin convent in Paris, whence it received the name of the Jacobin Club, given to it first by its enemies; the name which it adopted being that of the *Society of Friends of the Constitution.* It now also admitted members who were not

members of the national assembly, and held regular and public sittings. Its influence over the agitation, of which the chief seat and focus was in the capital, extended over the whole country through affiliated societies. Its power increased, until it became greater than that of the national assembly. It formed not less than 1,200 branch societies or clubs throughout France. When the national assembly dissolved itself 1791, Sep., the election of the legislative assembly was accomplished mainly under the influence of the Jacobin Club. Almost all the great events which rapidly followed were determined by the voice of the club, whose deliberations were regarded with more interest than those of the legislative assembly. It reached the zenith of its power when the national convention met 1792, Sep. The agitation for the death of the king, the storm which destroyed the Girondists, the excitement of the lower classes against the *bourgeoisie* or middle classes, and the reign of terror over all France, were the work of the Jacobins. But the overthrow of Robespierre 1794, on the 9th Thermidor gave the death-blow to the Jacobin Club also. The magic of its name was destroyed; and the Jacobins sought in vain to contend against a reaction which increased daily both in the convention and among the people. A law of Oct. 16 forbade the affiliation of clubs, and the Jacobin Club was finally closed 1794, Nov. 9. Its place of meeting was soon afterward demolished. —The term Jacobin is often used to designate persons of extreme revolutionary sentiments.

JACOBITE, n. *jăk'ō-bīt* [*Jacōbŭs*, James, the Latinized form of the Heb. *Ja'acob*, Jacob, James]: one attached to the cause of King James II., particularly after his flight and abdication, and to his line: ADJ. of or belonging to the Jacobites. JAC'OBITISM, n. *-ĭzm*, the principles of the Jacobites. JAC'OBIT'ICAL, a. *-bĭt'ĭ-kăl*, belonging to the Jacobites. See JACOBITES (in British History). JACOBITES, in *chh. hist.:* see JACOBITE CHURCH; MONOPHYSITES.

JAC'OBITE CHURCH, OR JAC'OBITES: name denoting specially the Monophysites now thinly scattered in an ecclesiastical organization over Syria, Mesopotamia, and Chaldea. The name is from a Syrian monk Jacobus Baradæus (Bar-dai), who in the reign of Justinian formed the Monophysite recusants of his country into a single party. This church rejects the decrees of the Council of Chalcedon (q.v.) and accepts those of the second council of Ephesus (q.v.). The Jacobites at present number about 80,000, and are subject to two patriarchs, appointed by the sultan—one resident at Diarbekir, with the title of Patriarch of Antioch, the other at Saphran, under the style of Patriarch of Jerusalem.—The Coptic, Abyssinian, and Armenian, churches also are sometimes called Jacobites, but not with strict propriety, though they all are Monophysites. See MONOPHYSITES; EUTYCHES.

JACOBITES, *jăk'o-bīts*, in British History: adherents of the male line of the House of Stuart in Great Britain and Ireland after the Revolution of 1688. Many of the most devoted royalists followed James II. into France; but the greater part of the Jacobites remaining in their native land made more or less show of submission to the new government, while they secretly supported the cause of the Pretender. Their intrigues and conspiracies were incessant till the middle of the 18th c. Their hostility to the House of Hanover broke out in rebellions in 1715 and 45, in consequence of which not a few of them lost their lives upon the scaffold, titles were attainted, and estates confiscated. After 1745, their cause became so obviously hopeless, that their activity mostly ceased; and it was not long till it ceased altogether, and those who still retained their attachment to the exiled family acquiesced in the order of things established by the Revolution. In Scotland, the hopes and wishes of the Jacobite party were expressed in many spirited songs, which form an interesting part of the national literature. See the *Cullodon Papers* (Lond. 1815); *Hogg's Jacobite Relics* (2 vols. Edin. 1819); and Chamber's *Jacobite Memoirs* (Edin. 1824). The Jacobites of England were called also *Tories*. They were generally distinguished by warm attachment to the Church of England, as opposed to all dissent, if they were not members of the Church of Rome; and held very strongly the doctrine of *non-resistance*, or the duty of absolute submission to the king. The Jacobites of Scotland also were generally Episcopalians and Rom. Catholics. Macaulay, however, points out that the Highland clans which espoused the Jacobite cause did so on other grounds than the English Jacobites, and were far from having previously received the doctrine of non-resistance. In Ireland, the Jacobite cause was that also of the Celts as opposed to the Saxons, or the native race against the English *colonists*, and of the Rom. Catholics against the Protestants. These diversities prevented a complete union, and greatly weakened the Jacobites. See STUART, FAMILY OF; JAMES II., of England. See *History of the Rebellion in* 1745, by R. Chambers.

JACOBS, HENRY EYSTER, D.D.: American Lutheran clergyman and theologian: b. Gettysburg, Pa., 1844, Nov. 10. He was graduated from Pennsylvania College (Gettysburg) in 1862, from the Lutheran Theological Seminary at Gettysburg in 1865, was professor of Latin and history in Pennsylvania College in 1870–80, of ancient languages in 1880–1, and of Greek in 1881–3. In 1883 he became professor of systematic theology in the Lutheran Theological Seminary, and in 1894 dean of the faculty of that institution. His publications include: *The Lutheran Movement in England* (1891); a *History of the Lutheran Church in America* (1893); *Elements of Religion* (1894); a *Life of Martin Luther* (1898); and *The German Emigration to America* 1709–40 (1899).

JACOBS, Joseph, Anglo-American author and journalist: b. Sydney, New South Wales, 1854, Aug. 29. He was graduated from St. John's College, Cambridge, was at various times editor of *Folk Lore*, the *Literary Year-Book*, and the *Jewish Year-Book*, was elected president of the Jewish Historical Society, and became literary editor of the *Jewish Encyclopædia*. In 1896 he lectured in the United States. In 1906 he became professor of English literature and rhetoric in the Jewish Theological Seminary. His publications include, beside translations and editions of English classics: *Celtic Fairy Tales* (1891); *Indian Fairy Tales* (1892); *The Jews of Angevin England* (1893); *Studies in Biblical Archæology* (1894); *Literary Studies* (1895); and *Jewish Ideals* (1896).

JACOB'S-LADDER, n. *jā'kŏbs-lăd'dėr* [*Jacob*, and *ladder*]: plant, supposed to be so called from its successive pairs of leaflets; the *Pŏlĕmōnĭŭm cærūlĕŭm*, or *Greek Valerian*, Ord. *Pŏlĕmōnĭācĕæ*. It is a herbaceous perennial plant of central and southern Europe, and temperate parts of Asia and N. America. It is common in flower-gardens in Britain. It has pinnate leaves, with ovato-lanceolate leaflets, a smooth stem 1–2½ ft. high, and a terminal raceme of bright blue (sometimes white) flowers, with wheel-shaped 5-lobed corolla. Great medicinal virtues were formerly ascribed to it, but the only quality which it seems to possess is a slight astringency.

JA'COB'S LAD'DER: on shipboard, short rope-ladder with wooden steps, to give easy access to the shrouds and tops.—Jacob's Ladder is the name also of an apparatus for raising light weights to a considerable height: one form, much used in breweries and distilleries, is an endless revolving chain of buckets, filling themselves at the bottom of the chain and emptying themselves at the top. —Jacob's Ladder is the name also of a cross-staff for taking altitudes.

JACOB'S STONE: a stone carried off from Scone in Scotland by Edward I. (see Scone), now inclosed in the coronation chair, Westminster—traditionally but absurdly said to have been the stone on which Jacob leant his head when he dreampt of the ladder reaching to heaven.

JACOBUS, n. *jă-kō'bŭs* [L. *Jăcōbus*, James]: a gold coin, in value about 25 shillings, so called from James I., in whose reign it was first coined.

JACOBUS, Melancthon Williams, D.D., LL.D.: American Presbyterian clergyman and educator: b. Allegheny, Pa., 1855, Dec. 15. He was graduated from Princeton in 1877, from the Princeton Theological Seminary in 1881, and after study at Göttingen and Berlin (1881–4), was pastor of the Presbyterian Church at Oxford, Pa., in 1884–91. In 1891 became professor of New Testament exegesis and criticism in the Hart-

ford (Conn.) Theological Seminary. His Stone lectures at the Princeton Theological Seminary (1897–8) appeared as *A Problem in New Testament Criticism* (1900).

JACO'BY, Harold, American astronomer: b. New York, 1865, March 4. On his graduation from Columbia University in 1885, he determined to apply himself to astronomical research, a subject in which he had always evinced interest, and he was appointed assistant astronomer United States eclipse expedition to West Africa (1889–90). He has been professor of astronomy at Columbia since 1894 and is an active member of the leading astronomical and scientific societies at home and abroad. He has written numerous technical monographs in astronomical photography, stellar parallax and star clusters which have been published by French, English and Russian societies. He has also been a frequent contributor to the periodical press on popular astronomy.

JACONET, or Jacconet, n. *jăk'ō-nĕt* or *zhăk'ō-nĕt* [F. *jaconas*]: a description of muslin made in France, principally used for children's collars and dresses; also called *nainsook*.

JACOTOT, *zhâ-ko-tō'*, Jean Joseph: 1770, Mar. 4—1840, July 30; b. Dijon, France: inventor of the 'Universal Method' of Education. He served in the army, but 1790 was appointed by Napoleon, first to the chair of mathematics in the Normal School, afterward sec. to the minister at war, and a director of the Polytechnic. He retired to Belgium 1815, where he was appointed lecturer on French literature in the Univ. of Louvain, and afterward director of the military Normal School. He returned to Paris 1838, and died there. His system, propounded in general rules, which, however, without his own explanation, would have been quite unintelligible, appears to consist in directing the student's exertions to particular *subjects*, encouraging and inciting him in every possible manner to make use of his mental powers, and there leaving him ; the teacher is on no account to become an expounder, but after setting the student on the right track, is to leave him to explain away his own difficulties. Jacotot's method resembled that of Hamilton (see Hamiltonian System), and, like it, was crude and one-sided. The valuable elements of it have been incorporated in the more rational and catholic methods of recent times. The wonderful results said to have been produced by Jacotot are, so far as real, to be attributed to the exceptional zeal and energy that always characterize the apostle of a new system, as much as to the system itself.

JACQUARD, Joseph Marie, *zhâ-kâr*, French inventor: b. Lyons, 1752, July 7; d. Oullins, near Lyons, 1834, Aug. 7. His parents were silk weavers, and he learned the same trade. After a long period of hardship, during which he shared in some of the campaigns of the revolu-

tion, he made his name famous by the invention of a new loom, which was publicly exhibited in 1801. He endeavored to introduce it into general use in Lyons, but was mobbed, and all but lost his life. Ultimately, however, his invention was bought by the French government, and he was able to spend the latter part of his life in comfortable independence. The subsequent prosperity of Lyons is largely attributable to his invention, and a more enlightened generation erected a statue to him in 1840 on the very spot where his loom was publicly destroyed. See LOOM.

JACQUERIE, n. *jăk'rĭ* or *zhăk'rĭ* [F. *Jacques*, James, familiar name for a countryman or peasant, as our *Jack*, *John*, etc. (see JACK)]: formidable insurrection of the French peasantry so named, against the nobles their oppressors, in middle of the 14th c., in the reign of John. The insurrection of the Jacquerie began 1358, when the French king was a prisoner in England, and France in disorder and anarchy. The immediate occasion of it was the enormities perpetrated by Charles the Bad, King of Navarre, and his adherents; but it was really caused by long-continued oppression on the part of the nobles. Suddenly rising against their lords, the peasants laid hundreds of castles in ruins, murdered the nobles, and violated their wives and daughters, practicing every enormity, and acting, as they said, on the principle of doing as had been done to them. The insurrection broke out in the neighborhood of Paris, but extended to the banks of the Marne and the Oise. For some weeks this part of France was entirely at their mercy; but the magnitude of the danger induced the quarrelsome nobles to make common cause against them, and June 9 the peasants were defeated with great slaughter near Meaux by Captal de Buch and Gaston Phébus, Count of Foix; insurrection was put down.

JACTITATION, n. *jăk'tĭ-tā'shŭn* [L. *jactĭtārĕ*, to cast or toss to and fro—from *jactārĕ*, to throw or fling]: a tossing about of the body; restlessness; in *med.*, unconscious movements of a patient in the delirium of a fever. JACTITATION OF MARRIAGE, a suit formerly competent in English ecclesiastical courts, and now competent in English divorce court, to settle a question of disputed marriage. If a person profess that he or she is married to another, the latter may institute suit, and call upon the former to produce proof of the marriage. If proof be not produced, then a decree passes which enjoins the person to perpetual silence on the subject. The Scotch suit of a declarator of putting to silence, is equivalent to jactitation of marriage; a notorious instance of its use was in the Yelverton marriage case.

JACULATORY, a. *jăk'ū-lā'tĕr-ĭ* [L. *jăcŭlātŭs*, hurled or thrown, as a javelin or dart]: darting or throwing out suddenly; uttered in short sentences; ejaculatory.

JAC'ULA'TION, n. *-lā'shŭn*, the act of throwing missiles or weapons.

JADE, v. *jād* [Sp. *jadear*, to play as the flanks, to pant—from *ijada*, the flank]: to tire or fatigue; to become tired; to weary with hard service, attention, or study: N. a tired or worn-out horse; a worthless nag; a mean or sorry woman; a young woman, usually in slight contempt. JA'DING, imp. JA'DED, pp. and a. fatigued; wearied; harassed. JADISH, a. *jā'dĭsh*, vicious—applied to a horse; unchaste—applied to a woman. *Note.*—JADE is also referred by Mackay to Gael. iad, jealousy, *iadach*, or *eudach*, jealous, suspicious; and by Skeat to Dut. *jagan*, to hunt, to drive: OE. *yaud;* Scot. *yad*, or *yaud*, a jade.—SYN. of 'jade, v.': to weary; harass fatigue; exhaust; crush; sink; dispirit.

JADE, n. *jād* [F. *jade*, earlier, *l'ejade* (Voiture 1633), It. *iada* (Florio 1589), Sp. *Piedra de la yjada* (Nicholas Monardes, a physician of Seville, 1569), from *piedra* (Lat. *Petra*, a stone, + *de la*, of the, + *yjada* (or *ijada*), the flank or side, pain in the side.]. A general name for the two minerals now known as nephrite and jadeite, much used by primitive man during the neolithic period of the Stone Age for his weapons and cutting implements, and in Europe during and after the Spanish conquest of Mexico and the West Indies as a remedy for certain painful iliacal ailments, such as colic, nephritis, sand, gravel, etc.; hence the name given to them by the Spaniards. The wearing of these stones had great vogue in Europe for a time, and marvelous cures were reported. In China, jade is *the* gem, and has been used from the earliest times for articles of both use and ornament.

NEPHRITE which belongs to the amphibole group of minerals is a silicate of magnesia and lime; has a hardness of 6.5, and a specific gravity of 2.9 to 3.0 (see NEPHRITE). JADEITE, which belongs to the Pyroxene group, is a silicate of alumina and soda, hardness 7.00, and specific gravity, 3.3 to 3.4. CHLOROMELANITE, a variety of jadeite, has the same hardness, but owing to the presence of a larger percentage of iron its specific gravity is greater (3.4 to 4.0), and it is of a very dark-green almost black color. The color of jade depends on the contained portion of iron and manganese oxides. It is generally of a more or less uniform shade of green (lettuce, cabbage, apple, emerald, spinach, olive, etc.,), but many tones of white are found (especially in Chinese jade), sometimes varied or tinted with undefined patches of green, heliotrope, etc. When cut and polished some specimens exhibit considerable translucency, and some are very sonorous when struck. Jade is probably the toughest known mineral, and its compression—resisting power—is remarkable. Careful tests have shown that, in some cases, it requires a pressure of 96,000 to

100,000 pounds to disrupt an inch cube. Raw jade occurs in the oldest crystalline schists. *Nephrite* is found in the K'unlun mountains in Chinese Turkestan and in the rivers of Khotan which rise in these mountains; in the Sajan mountains of Siberia near the Mongolian frontier; in New Zealand; in the arsenopyrite mines of Reichenstein, near Breslau, Silesia; near Jordansmühl, Silesia; and in the Jade mountain of Alaska (3,500 ft.), long known to the natives, discovered by Lieut. G. M. Stoney, U. S. N. in 1882–6, 150 miles inland, and north of the Kowak river. Jadeite is found in northern Burma. No jadeite occurs on this continent, yet the prehistoric jade remains of Mexico, Guatemala, Guiana, etc., are jadeite. This led Prof. Fischer of Freiburg, Baden, to the conclusion that they must have come from Burma, and an interesting ethnological controversy has been the result. Both jadeite and nephrite implements have been found in France, and among the relics of the prehistoric pile-dwellings of the Swiss lakes, etc., yet jade is foreign to both countries. The material of the celts found by Schliemann in the prehistoric cities at Hissarlik doubtless came by migration or through barter from Chinese Turkestan. See Fischer's *Jadeit und Nephrit* (1880).

JADE, *yâ'deh*, or JAHDE: navigable river and bay in Prussia, w. of the mouth of the Weser. The bay, which opens into the North Sea, was formed 1511 by an inundation of the sea caused by a storm, and overflowing a tract of 74 sq. m. A territory also named Jade borders on the bay.

JAD'WIN, EDGAR, American military engineer: b. Honesdale, Pa., 1865. He studied at Lafayette College, was graduated from West Point in 1890, was an assistant in government engineering in 1890–1 and again from 1893, in the Spanish-American War was successively major and lieutenant-colonel of the 3d United States volunteer engineers, and for a time commanded a battalion of this regiment in the sanitation of Matanzas, Cuba. Promoted captain in the corps of engineers, U. S. A. (1900), he was appointed (1902) to direct all Pacific coast fortification and river and harbor work south of San Francisco.

JAFFA. See JOPPA.

JAFFNA, *jâf'na:* district of Ceylon, comprising several low dry islands of coral formation in Palk Strait, separated from the n. end of Ceylon and from each other by narrow creeks; length of group 40 m., width 15 m., principal island and chief town Jaffna, Jaffnapatam of Yalpannan. Its elevation is so slight that a large part of it is submerged in rainy seasons, and its soil so dry that nothing of importance will grow without irrigation. The chief town on the w. has a remarkable fort built of blocks of white coral; the highland region contains several villages. The leading products are palms,

cocoa-nuts, palmyra wood, bananas, areda-nuts, yams, betel, tobacco, inferior cereals, and rice. It is said that Jaffna was occupied by descendants of the Tamil race B.C. 204, and a Tamil rajah was in power when the Portuguese seized the island 1617. The early inhabitants were idolators, but Francis Xavier and his missionaries made many converts there 1544, and a Jesuit college and a Franciscan and Dominican monastery were erected. The Portuguese were driven out by the Dutch 1658, and the Dutch by the English 1795. Pop. of dist. about 220,000; town about 45,000.

JAFFNA, *jâf'na*, or JAFFNAPATAM, *jâf'na-pâ-tâm':* sea-port in Ceylon on the peninsula of J. at the n. extremity of the island. Jaffna is a neat and pleasant town with stone houses of one story in height, among gardens, shrubbery, and shade trees. The place is of Dutch origin, and a portion of the population is of Dutch descent, and there is still standing a Dutch Presb. church. The Church of England Miss. Soc. began work here 1818, and the American Board of Missions 1822. There is a college, established 1872, also a public library. The inhabitants are mainly Tamils, and are very industrious. Pop. about 45,000.

JAG, n. *jăg* [Gael. *gagaich;* Bret. *gagei*, to stutter: Bav. *gagkern*, to cluck as a hen: Gael. *gog*, the cackling of a hen, the nodding of the head: such syllables as *gag, jag, gig*, being often imitative of harsh broken sounds in the first instance, then the sort of figures traced out by the tremulous irregular movements of bodies]: a projection; an indentation; the tooth of a saw; a notch; a ragged protuberance; a roughed-up or barbed projection of metal produced by nicking underneath, or in front of it, with a cold chisel, or by casting. V. to notch; to cut like the teeth of a saw. JAG'GING, imp. JAGGED, pp. *jăgd:* ADJ. *jăg'gĕd*, having notches or teeth; having sharp irregular edges and surfaces. JAG'GER, n. *-gẽr*, one who *jags;* in *Scot.*, a pedler; the bearer of a wallet or leather bag, called a *jag;* small wheel, mounted in a handle, for crimping and ornamenting edges of pies, cakes, etc., or cutting them into ornamental shapes; a jagging-iron; a toothed chisel. JAG'GEDLY, ad. *lĭ.* JAG'GEDNESS, n. *-nĕs*, the state of having rough projections; unevenness. JAG'GY, *a. -gĭ*, rugged; uneven; set with teeth. *Note.*—JAG is also referred to Gael. and Ir. *gag*, a cleft; Gael. *gag*, to split; W. *gag*, a cleft, an aperture.

JAGANNÂTHA. See JAGGERNAUT.

JAGATAI, n. *jăg-a-tī'* [from *Jagatai*, the native name of Turkistan—from *Jagatai*, a son of Genghis Kahn]: the dialect used by the inhabitants of Turkistan.

JAGELLONS, *yâ-ghĕl'onz*, THE: illustrious dynasty which reigned in Lithuania, Poland, Hungary, and Bohemia.—The name is derived from JAGELLON, last of a long line of hereditary grand dukes of Lithuania, who suc-

ceeded to his patrimonial possession 1381, and was (1386) appointed successor to his father-in-law, Lewis the Great, King of Poland and Hungary, in the kingdom of Poland, after having embraced Christianity, and changed his name to WLADISLAS IV. He was engaged during the whole of his reign in repelling the attacks of the Teutonic Knights,, whom he finally overthrew by the help of the Hussites of Bohemia. He made an unsuccessful attempt to wrest Hungary from Emperor Sigismund, founded the Univ. of Cracow 1400, and died 1434 at Grodek.—His son, WLADISLAS V., King of Poland (reigned 1434–1444), was elected king of Hungary also on the death of Albert of Austria 1439, mainly through the assistance of John Hunyady (q.v.), vaivode of Transylvania. After a war of two years with Emperor Frederick III., Wladislas turned his sword against the Turks, drove them repeatedly from Moldavia, Wallachia, and Bulgaria, and returned to his capital of Buda loaded with spoils. In 1444 Amurath II. sued for peace, which the warlike Wladislas granted, swearing a solemn oath by the Holy Evangelists; but the pope, having, in defiance of all truth and equity, sent Cardinal Julian to cause a rupture of the treaty, and absolve Wladislas from perjury, that gallant prince summoned to his side John Hunyady, and being joined by Scanderbeg, at the head of an auxiliary force of Epirotes, invaded Turkey, but was totally defeated and slain at Varna (1444, Nov. 10); Cardinal Julian also being left dead on the field.—He was succeeded in Poland by his brother CASIMIR IV. (reigned 1444–92), whose three sons successively reigned—JOHN ALBERT (1492–1501), ALEXANDER (1501–06), and SIGISMUND (1506–48).—SIGISMUND AUGUST (1548–70), son of Sigismund and one of the wisest of the Polish monarchs, added Livonia to his kingdom, and passed an edict of universal toleration.—His sisters, Anne and Catherine, married respectively Stephen Bathori of Transylvania, and John III. of Sweden, and the Jagellon dynasty was continued on the Polish throne till 1668.

WLADISLAS, fourth son of Casimir IV. of Poland, was elected king of Bohemia 1471, on the death of George Podiebrad, and also succeeded Mathias Corvinus in Hungary 1490.—Wladislas died 1516; and was succeeded in both kingdoms by his son, LEWIS II., who was defeated and slain by the Turks at Mohacs, 1526 Aug. 29, and with whom terminated the Jagellons of Bohemia and Hungary.

JÄGER, n. *yā'gėr* [Ger.]: a hunter; a sportsman.

JÄ'GER. See SKUA.

JAG'GAR, THOMAS AUGUSTUS, American Protestant Episcopal bishop: b. New York 1839, June 2. He was graduated from the General Theological Seminary, New York, and ordained deacon in the Protestant Episcopal Church 1860. While serving as rector of Holy Trinity

parish, Philadelphia, Pa., he was elected to the newly formed diocese of Southern Ohio, and consecrated May 1875. He retired in 1905. He is the author of *The Men of the Ages; The Ministry of Phillips Brooks; The Personality of Truth*, the Bohlen lectures for 1900.

JAGGERNAUT, or Jaggernaut Puri, *jâg-ghĕr-nawt' pô-rē'*, or Puri: town in Orissa (85° 54′ long., and 19° 45′ lat.), celebrated as one of the chief places of pilgrimage in India. It owes its reputation to a temple erected there in honor of Vishnu, and containing an idol of this Hindu god, called *Jaggernaut* (commonly *Juggernaut*), corruption of the Sanskrit word *Jagannâtha*, i.e., lord of the world. According to a legend related in the Ayeen Akbery, a king desirous of founding a city sent a learned Brahman, to pitch upon a proper spot. The Brahman, after a long search, arrived upon the banks of the sea, and there saw a crow diving into the water, and, having washed its body, making obeisance to the sea. Understanding the language of the birds, he learned from the crow that if he remained there a short time, he would comprehend the wonders of this land. The king, apprised of this occurrence, built on the spot where the crow had appeared a large city and a place of worship. The rajah one night heard in a dream a voice saying: 'On a certain day cast thine eyes on the seashore, when there will arise out of the water a piece of wood, 52 inches long, and 1½ cubits broad; this is the true form of the diety; take it up, and keep it hidden in thine house seven days; and in whatever shape it shall then appear, place it in the temple and worship it.' It happened as the rajah had dreamed, and the image called by him Jagannâtha became the object of worship of all ranks of people, and performed many miracles. According to another legend, the image arising from the water was an avatâra or incarnation of Vishnu; it was fashioned by Vis'wakarman, architect of the gods, into a fourfold idol. The car festival, when Jagannâtha is dragged in his car on a yearly visit to his country quarters, is currently believed to be the occasion of numerous cases of self-immolation, the frantic devotees committing suicide by throwing themselves before the wheels of the heavy car. This is, it would appear, a calumny of English writers. In the *Imperial Gazetteer of India* (1881), Dr. W. W. Hunter writes: 'I carefully examined the whole evidence on the subject from 1580, when Abul Fazl wrote, through a long series of travellers, down to the police reports of 1870. I came to the conclusion which H. H. Wilson had arrived at from quite different sources, that self-immolation was entirely opposed to the worship of Jagannâth, and that the rare deaths at the car festival were almost always accidental. The temple dates from 1198.

JAGGERY, n. *jăg'gĕr-ĭ:* the Indian name for a kind of coarse dark sugar, obtained by inspissation from the sap (*nera* or *toddy*) of palms. The sap of many species of

palms yields jaggery. The cocoa-nut yields much of the jaggery in parts of the East. It is, as generally used in the E. Indies, a coarse kind of sugar; chemically, it is the same with cane-sugar. The sap, which by inspissation yields jaggery, becomes also, by fermentation, palm-wine, and from it by distillation arrack is made. Jaggery is mixed with lime to form a cement.

JAGHIRE, n. *jăg'ēr* [Hind. *jagir*]: in the *E. Indies*, a government grant of land or of produce to an individual for life, or for the support of a public establishment. JAG'HIRE-DAR, n. *-dâr*, one who holds a *jaghire*.

JAGUAR, n. *jăg'ū-âr* or *jă-gwar'* [Brazilian, *jagoard;* Sp. *jaguara* or *jaguar*], (*Felis onça*): one of the largest of the cat tribe, and by far the most powerful and dangerous of the American beasts of prey; sometimes called the American Tiger or American Leopard. It is nearly equal to the tiger in size; the head is large, the body thick and the limbs robust; the tail is long, and of equal thickness throughout. The color varies considerably, but is usually a rich yellow, with large black spots and rings, small black spots generally appearing within the rings, a mark by which the skin of the jaguar may be readily distinguished from that of the other large spotted or ringed *Felidæ*. A black or very dark-brown variety occurs, but the characteristic markings may be seen in certain lights, deeper in color than the rest of the fur. The jaguar is strong enough to drag away a horse, and swift enough to capture horses on the open pampas. It is, however, an inhabitant chiefly of forests. It abounds so much in some districts, that settlements have been deserted on account of its destruction of domestic animals. It climbs trees, however smooth the stem, and moves about with great agility among branches, making even monkeys its prey. Instances of its attacking men, though they sometimes occur, are not frequent, but it is bold enough to approach inclosures, and even to enter villages in broad daylight, in quest of prey. The jaguar is often taken in traps; and it is sometimes hunted with dogs, when it generally at last takes refuge in a tree, and is there shot. The skins of jaguars are exported from S. America in great numbers. The jaguar is found in almost all parts of S. America, but its usual range does not now extend north of the Isthmus of Darien; though it was reported as common in s. Mexico by the first Spanish settlers, and is said to be still seen, though very rarely, as far north as the boundary of Texas. It is called OUNCE (*Onça*) in parts of S. America.

JAH, n. *jâh:* a contraction for Jehovah.

JAHN, *yân*, FRIEDRICH LUDWIG: 1778–1852: eccentric German, the first to make gymnastics a national pastime in Prussia, especially for soldiers. His gymnastic schools became centres of patriotic enthusiasm, but his fantastic theories alarmed the government, and he was treated as a dangerous demagogue. He died at Freiburg.

JAHN, Johann: 1750, June 18—1816, Aug. 16; b. Tassawitz, Moravia: distinguished Rom. Cath. orientalist and biblical critic. He received his early education at Znaim and Olmütz, and 1772 entered the Premonstratensian convent of Bruck, where he took his vows 1774, and was appointed prof. of oriental languages and biblical criticism. On the suppression of this convent 1784, Jahn was transferred to the same professorship in Olmütz, and finally to the Univ. of Vienna, where he took also the chair of dogmatic theology. As regards the Rom. Cath. literature of Germany Jahn may be regarded as the father of biblical criticism. But the boldness of some of his opinions having aroused the alarm of the ecclesiastical authorities, he was honorably removed from his chair in the univ., by being promoted to a canonry of St. Stephen's at Vienna, 1803. He continued, however, to pursue the same studies with great reputation till his death 1816, and published many works in both departments, the most important of which, besides his grammars, lexicons, and elementary books of the Hebrew, Syriac, Chaldaic, and Arabic languages, are *Introduction to the Old Testament*, 2 vols. 1792 and again in 4 vols. 1802–3; *Biblical Archæology*, 5 vols. 1797–1805, of both which works a compendium appeared 1804, and again in 1814; *Manual of General Hermeneutics*, 1812; an Appendix of Dissertations to this work, 2 vols., 1813–15; and an ed. of the Hebrew Bible, 4 vols. 1806. Five years after his death, a collection of *Remains* was published at Tübingen, 1821, the genuineness of which has been questioned, though seemingly without reason. His works have gone through many editions in Germany, and have been translated into several languages.

JAHOVIST, or Jahoist. See Elohist: Jehovah.

JAIL, n. *jāl* [written also Gaol, which see]: prison; place of confinement for prisoners awaiting trial. Jail'-or, n., or Jailer, n. *-ėr*, the keeper of a jail. Jail-bird, one who has frequently been in jail.

JAIL FE'VER (known also as Putrid or Pestilential Fever): now considered to be merely Typhus Fever (q.v.), and not a distinct disease. Owing to improved sanitary regulations, this form of disease is now almost unknown; but we learn from Howard's *Account of the State of Prisons*, that, in his time, the disease was very frequent in the prisons of England, though unknown in those of the continental countries. In the celebrated Black Assize (q.v.), at Oxford 1577, there is no evidence that the disease prevailed among the prisoners, and yet it broke out among the persons present at the trial. So recently as 1750, May, the lord mayor, an alderman, two judges, most of the jury, and a large number of the spectators, caught this disease from attending the assizes at the Old Bailey; and many of those who were infected died.

JAIN AR'CHITECTURE: architecture of the Jains. Their chief seats in India being Guzerat and Mysore, the chief temples and ruins are in those provinces; the oldest are believed to be about Junaghar in Guzerat. There are fine ones in Mount Abu, a granitic mountain 5,000 or 6,000 ft. high in the same province. One temple there is of date between 1197 and 1247, another about 1032.

JAINS, *jīnz*, or JAINAS, *jī'nâz*, a Hindu religious sect, which in union with the Buddhists opposed Brahmanism. They are numerous in the great cities of western and northwestern India, as well as in the Dravidic states of the South. The name signifies a follower of Jain ('conqueror of the world'), one of the denominations of their apotheosized saints. They have many fine temples built in different parts of the Deccan, as well as elsewhere. The Jains deny the divine origin and infallible authority of the Vedas; they reverence certain holy mortals, now termed Tirthankara or saints, and they manifest extreme and even ludicrous tenderness for animal life. They positively affirm that the world exists from all eternity, not being created by God or any other being, and that it will exist forever. This world is divided into three parts—the upper, the middle, and the lower worlds. The Jains believe that not to kill any sentient being is the highest virtue. They believe in a sort of nirvâna (like the Buddhists). Those who attain to this nirvâna, this extinction of action, this final liberation, do not return to a worldly state, and there is no interruption to their bliss; they have perfect vision and knowledge, and do not depend upon works. The Jains are split up into two principal divisions, Digambaras and Svêtâmbaras; the points of difference between them are said to comprehend a list of 700 topics, 84 of which are considered of paramount importance. The Digambara (sky-clad, naked) now wears colored garments, confining the disuse of clothes to meal hours; the Svêtâmbara wears, as the name signifies, white garments. Both the parties have the same sacred books, which they style 'angas,' but no sacerdotal caste.

JAIPUR'. See JEYPORE.

JAKSE, n. *jāks* [Ger. *gauche*, a filthy liquid: AS. *cachus*, a privy]: in *OE.*, a privy; a necessary house.

JAKUTSK, *yâ-kôtsk'* (*Yakootsk*): chief town of the govt. of Jakutsk in E. Siberia (See SIBERIA). It is on the left bank of the river Lena, lat 62° 1′ n., long. 129° 44′ e.; 5,751 m. from St. Petersburg; pop. about 6,000. The whole industry of the town consists in candle-works, but it is, notwithstanding, the principal market of E. Siberia for traffic with the native hunting tribes of the Jakuts and Buriats. The former, mostly nomadic tribes, possessing large herds of cattle and horses, bring butter to the market, which is dispatched on horseback to the port of Okhotsk. The latter, also a nomadic tribe, bring

to Jakutsk great quantities of fur-skins, of sables, foxes, martens, squirrels, bears, hares, etc. The busiest periods of the year are the months of May and June; in May, the goods are dispatched to the seaports; in June there is an important fair, during which the quantity of merchandise sold, chiefly furs and mammoth tusks, amounts to about $250,000 in value. Manufactured goods, hardware, etc., are brought from Irkutsk by the Lena.—The govt. of Jakutsk has 1,533,397 sq. m.; pop. 260,000.

JAL'ANDHAR. See JULLUNDUR.

JALAP, n. *jăl'ăp* [*Xalapa*, in Mexico, where it grows: F. jalap]: root of a plant reduced to powder—used in medicine as a purgative; the *Exŏgŏnĭŭm purga;* also from a plant called *Ipŏmœă purga*, ord. *Convŏlvŭlăcĕœ*. JALAPIN, n. *jăl'ă-pĭn*, a purgative resin contained in certain Colvolvulaceæ, one of the active principles of jalap. The plant from whose tuberous roots *Jalap* is prepared, is found in Mexico, about 6,000 ft. above the sea-level, in the neighborhood of the town of Jalapa or Xalapa. It is a perennial twining plant, with large flowers and a turnip-like root, varying from the size of a hazel-nut to that of a man's fist. The roots when fresh are white and fleshy, and abound in a milky juice. They are prepared for the market by drying. Jalap was long erroneously referred to other plants, among others to *Mirabilis Jalapa*, known in flower-gardens as *Marvel of Peru*. The root known as *Male Jalap* or *He Jalap*, with which the true jalap of commerce is often adulterated, was recently declared by Hartweg to be *Ipomœa batateides*. Its properties are somewhat similar to those of true jalap, but it is very inferior. Jalap seems to have been introduced into Britain as a medicine about 1609.

The dried roots are brown and wrinkled externally, and of deep yellowish gray internally; their odor is faint and disagreeable, and their taste nauseous. The active ingredient is the resinous portion, which varies from about 10 to nearly 20 per cent., and which is composed of two distinct substances, *Jalapin* or *Palapine* ($C_{31}H_{50}O_{16}$), and *Jalapic acid*. Jalap resin may be distinguished from common resin by its insolubility in volatile oils. Jalap is a valuable cathartic, but is seldom given alone. Its purgative action is increased by the addition of a little calomel, and its hydragogue action by bitartrate of potash, while its tendency to produce griping is obviated by addition of a little ginger. It is extremely useful in those febrile affections of children which are associated with constipation; and in diseases of the brain it is a good purgative to select, on account of its derivative action. In the form of *Compound Jalap Powder*, which consists of one part of powdered jalap, two parts of bitartrate of potash, and a little ginger, it is of great service in some kinds of dropsy, by its hydragogue action. The ordinary dose of powdered jalap for an adult varies from 10 to 30 grains, a scruple generally acting smartly and safely;

for children under a year old the dose is two to five grains. The dose of the compound powder is double that of the ordinary powder. The *Tincture of Jalap*, in the dose of one or two drams, is a useful addition to the ordinary black-draught when it is desired to increase its activity.

JALAPA, or XALAPA, *ċhâ-lâ'pâ:* city in the Mexican confederation, capital of Vera Cruz, second in importance among the towns of that state. It is on the grand route between the capital of the country and the seaport of Vera Cruz, and about 60 m. w.n.w. of the latter. Its elevation of 4,335 ft. above sea-level gives it the climate of the temperate region, and it is a favorite resort of the invalids of the coast. The irregularity of the streets, the gardens which surround the city, the well-built houses, the parks, and promenades, all make the place most attractive. It was once the capital of the state. It is one of the oldest cities on the continent; one of its churches is said to have been built by Cortes, who found here an Indian town. The Franciscan convent was built in 1556. The great annual fair held here between the years 1720–77 made Jalapa a place of note. People came from far and near to see and purchase goods brought from Europe, mostly from Cadiz. In the city there are three hospitals, a number of good schools, and several fine church buildings. Pop. (1903) 20,500.

JALISCO, *hä-lēs'kō*, Mexico, a state bounded on the west by the Pacific Ocean, and on the north, east, and south by the states of Durango, Zacatecas, Aguascalientes, San Luis Potosi, Guanajuato, Quenetaro, Michoacan, Colima, and the territory of Tepic. The Sierra Madre range in the eastern portion of the state includes the active volcano Colima (about 14,238 feet) and other high mountains. The largest river is the Santiago, or Lerma, which forms the cascades of Juanacatlan in the vicinity of the city of Guadalajara. At that point the river is 520 feet wide, and falls 65 feet. A large electric plant utilizes the force generated by these falls, supplying electric power to a number of factories. Lake Chapala, the source of the Santiago, is the largest body of water in the republic. The total mineral production of the state is somewhat more than $2,250,000 Mexican silver. There are numerous silver, gold, copper, iron, lead, and cinnabar mines. The high table-lands of the eastern regions have a temperate or cold climate, and produce cereals; in the valleys and on the hot lowlands of the coast sugar-cane, cotton, vanilla, tobacco, oranges, and coffee are cultivated. The maguey plant is one of the chief products of the district of Tequila. The annual output of sugar is 11,000 tons of the raw, and 15,000 tons refined. The capital of the state, Guadalajara (q.v.), has become in recent years one of the chief manufacturing centres in Mexico, producing large quantities of *manta*, or unbleached cotton, and leather goods. More

than $300,000 Mexican silver is appropriated annually for the maintenance of schools, which are attended by 31,725 pupils. Private and church schools have an attendance of 14,106. The population of the state in 1900 was 1,137,311.

JALOUSIE, n. *zhăl'û-zē'*, or *jăl'û-zē'*, JAL'OUSIES', n. plu. *-zēz'* [F. *jalousie*, jealousy, a venetian-blind]: in the *E.* and *W. Indies* and in *France*, a name for venetian-blinds forming inside blinds.

JAM, n. *jăm* [mod. Gr. *zoumi*, broth, juice: but may only be another sense of JAM 2, from the sense 'pressed or squeezed']: a conserve of fruit boiled with sugar: see JAMS AND JELLIES.

JAM, v. *jăm* [Eng. *jamb*, the side-post of a door]: to press in between something that confines the space on each side, like the *jambs* of a door; to squeeze tight; to press or wedge in. JAM'MING, imp. JAMMED, pp. *jămd*. *Note.*—JAM may only be another spelling of *cham* or *champ*, to tramp heavily, to bite or chew: comp. also Ger. *zwang*, pressure; *zwängen*, to squeeze.

JAMAICA, a. *ja-mā'ka:* of or from *Jamaica*, as 'Jamaica pepper,' one of the names given to allspice. JAMAICA BARK, see CARIBBEE BARK. JAMAICA PEPPER, see PIMENTO.

JAMAICA, *ja-mā'ka* (aboriginally *Xaymaca*, or *Land of Wood and Water*): one of W. India Islands, and by far the most important of those which belong to Great Britain; about 90 m. s. of Cuba, in n. lat. 17° 40′—18° 30′, and w. long. 76° 15′—78° 25′; 4,200 m.; greatest length, 135 (or 144 m.); greatest breadth, 50 m. It is traversed from e. to w. by a heavily-timbered ridge, called the Blue Mountains, which rises to about 7,000 ft. From this range at least 70 streams descend to the n. and s. shores, but owing to the shortness and declivity of their courses they are not navigable, with the exception of one, the Black river, which affords for small craft a passage 30 m. into the interior. Excellent harbors are numerous; but incomparably the best is formed by a deep and capacious basin in the s.e. quarter of the island, which washes the most spacious and fertile of the plains between the hill-country and the coast. Around this inlet, and within a few m. of each other, are all the considerable centres of population, Port Royal, Kingston, and Spanish Town.

The climate varies considerably—the torrid belt of the coast gradually passing into the temperate region of the central heights. The latter is said to be remarkably favorable to longevity; and, after having long been a retreat for the residents themselves, it has lately begun to attract invalids from the United States. To contrast two positions—the one near Kingston Harbor, and the other at the intermediate elevation of 4,000 ft.—their annual means are stated to be respectively 81° F. and

68° F. Earthquakes have occasionally occurred, one of them, 1692, having almost overwhelmed Port Royal. The emancipation of the slaves 1834 had an unfavorable effect on the productiveness and trade of the island. But, even previous to the new order of things, the commercial crops had been steadily decreasing. To take by itself the grand staple of sugar, the last 3 years of the slave trade, 1805–07, had averaged fully 144,000 hogsheads; the 4 years before the commencement of the abolition of slavery, 1831–34, under 91,000; the 4 years of gradual abolition, 1835–38, nearly 70,000; the first 4 years of complete freedom, 1839–42, less than 42,000. The revenue of the govt. for the year ending 1899, Mar. 31, was $3,759,735; expenditure $3,499,000. The public debt at this time was $9,125,252. Large outlays were made for public works. A large part of the revenue was derived from customs. The imports, 1899, amounted to $8,963,454; exports, $9,078,869. Leading imports were cotton goods, fish, flour, rice; the principal exports being fruit, coffee, raw sugar and rum. The banana trade has greatly increased, the exports to the United States alone amounting to more than 2,500,000 bunches annually. The exports of all fruits, coffee, tobacco, timber, and cinchona are increasing and the live stock industry is becoming important. The total number of acres under cultivation was (1902) 739,256, of which 202,168 were under tillage and 413,152 under pasture; under sugar-cane, 27,342 acres; coffee, 31,265; bananas, 32,842; cocoanuts, 13,244; corn, 194; cacao, 3,548; ground-provisions, 91,733; Guinea grass, 125,936; common pasture, 329,603; pasture and pimento, 79,379. Jamaica has (1902) about 185 m. of railway in operation.

Jamaica was discovered by Columbus during his second voyage 1494, and was taken possession of by the Spaniards 1509. So great was the inhumanity of the conquerors, that 50 years after the Spanish invasion of the island the native population is said to have entirely disappeared. 1665, May 3, British expedition, sent out by Oliver Cromwell, under Admirals Penn and Venables, assailed and captured the island, which was formally ceded to England by the treaty of Madrid 1670. Under English rule, the chief events in the history of the island were: 1795, the rebellion of the Maroons, a community of runaway slaves, who had obtained a tract of land on the n. side of the island; 1831, a negro insurrection; and 1834, Aug. 1, the emancipation of the slaves. The last event was followed by ill-judged concessions of representative and constitutional rights to the newly liberated blacks. The experiment proved a failure. The blacks considered it a grievance that offices in the magistracy were not more frequently conferred on them. They wished to suppress coolie immigration, which tended to keep down wages. They sought to obtain land without rent, and the more violent even suggested the expulsion of the whole white population of the island.

In 1865, the discontent was at its height. In October of that year, a decision of the local court at Morant Bay against a black squatter, led to a negro rising, and the massacre of 23 whites. Martial law was proclaimed by Gov. Eyre, 1,000 houses were burned, some rebels were hanged, others were flogged; but the rebellion was effectually suppressed. For the course that he had taken, Gov. Eyre was thanked by the Jamaica Assembly; but in England a different view was taken of his conduct (see EYRE). He was recalled, and the representative constitution was suspended. Sir P. J. Grant was appointed gov., with entire authority to manage the affairs of Jamaica, with the aid of advisers nominated as in the other W. India Islands. It now appears that from the catastrophe of 1865, so nearly fatal to the island, a new life has sprung. Crime has diminished; education has everywhere advanced among the black population, the number of govt. schools in the island in 1901–2 being 728, with 84,799 children enrolled. A collection of Jamaica products was exhibited with very satisfactory results at the Philadelphia Exhibition of 1876, and 31 awards were obtained by the island. New roads have been formed, harbors are being constructed, and an irrigation canal is in progress which will give fertility to 50,000 acres of the beautiful plain between Spanish Town and Kingston. The Cuban refugees have taken several of the long forsaken sugar estates, thus increasing the value of property, and the official statements show that the export trade is increasing. Although Jamaica has not recovered all its former commercial prosperity, the negroes cannot now be described as idle. They cultivate their provision grounds with care, and produce for sale enough sugar and coffee to obtain a considerable supply of imported and manufactured articles. Extreme poverty is unknown, and under their present government they are described as lawabiding and inoffensive. Well-informed and experienced visitors to the island have strongly recommended energetic young Englishmen of the wealthier class, who contemplate emigration, to take their capital to the highlands of Jamaica. In 1880 a cyclone did damage to the extent of more than $5,000,000. The cap. of Jamaica is Kingston.

The ecclesiastical establishment has been abolished. The number of churches and chapels 1902 was 219 Church of England; 128 Wesleyan; 43 other Methodists; 27 Moravians; 189 Baptists; 73 Presbyterians; 10 Church of Scotland; 20 Christian; 26 Congl.; 28 Rom. Catholic; also two synagogues. There are also some Rom. Catholic priests and churches. The public and industrial schools are in a flourishing condition. A government scholarship of an annual value of £200 tenable for three years was established (1885) for annual competition by boys born in Jamaica. In 1879 the govt. bought the road

of the Jamaica railroad company, extending from Kingston to Old Harbor (23 m.), and opened an extension to Parus 1885, Mar., and completed the line to Ewarton the same year. Total pop. (1901) 770,242.

JAMAICA, N. Y.: formerly a town and cap. of Queens co., Long Island, but in 1898, Jan. 1, it was incorporated into the city of New York as part of the borough of Queens. The settlement is very old, dating back to 1656, and several houses are still standing and in a good state of preservation that were built before the Revolution. One of the New York state Normal Schools is located here, and there are a number of private schools, churches, banks, etc. Many business men of New York and Brooklyn reside in Jamaica. The surrounding country is largely devoted to market-gardening.

JAMAICA PLAIN: part of the 23d ward of Boston, Suffolk co., Mass.; formerly village in the town of W. Roxbury, Norfolk co.; on the Boston and Providence railroad, 3 m. from the centre of Boston. It contains the agricultural and horticultural school (Bussey Institution) of Harvard Univ., several churches, public library, rubber mills and carriage factories, and was incorporated with Boston 1874, Jan. 1. The beautiful shores of Jamaica Pond, on which it borders, are lined with the costly residences of many business men of Boston.

JAMB, n. *jăm* [F. *jambe*, a leg—from It. *gamba*—from mid. L. *gamba*, a thigh, a leg]: the side supports of any opening in a wall, as a door, or window; a door-post; a miner's term for any thick mass of rock which prevents pursuing the lode or vein.

JAMBOS. See EUGENIA.

JAMES [Gr. *Jacōbos*, and really the same word as Jacob]: name borne by several persons in the New Testament. (1.) JAMES, apostle, son of Zebedee and brother of John; (2.) JAMES, apostle, son of Alpheus—considered by many the same as James the Just: (3.) JAMES the Just, brother of Jesus (see these three below).

Others of the name are as follows: (4.) JAMES 'the Little'—usually improperly called 'the Less'—'brother of Joses' (Mk. xv. 40, and xvi. 1); 'son of Mary' (Matt. xxviii. 56; Mk. xv. 40; xvi. 1; Lk. xxiv. 10): he is by many identified with James the Just; (5) JAMES, either father or brother of the apostle 'Judas not Iscariot' (Lk. vi. 16; Acts i. 3).—It must be noted that the New Test. record is indefinite concerning the various persons of this name, and renders possible more than one scheme of identification and discrimination: see below.

JAMES: one of the 12 apostles of Jesus Christ, son of Zebedee and brother of John. He was among the earliest of Christ's disciples. Among those whom the Lord named 'apostles,' with reference to their future work, James, with Peter and John, was distinguished by special intimacy with the Master, being taken by him to

witness the raising of Jairus' daughter, the transfiguration, and the conflict in Gethsemane. He and his brother were named by the Lord 'Sons of thunder,' perhaps in view of their impetuous dispositions as manifested by the question, 'Wilt thou that we command fire to come down from heaven and consume them?' Impelled by ambition they sought, through their mother, the two chief places in what they then supposed was to be his earthly kingdom. After the resurrection, James was one of seven disciples to whom the Lord appeared at the Sea of Galilee. At the beginning of the Acts James is mentioned as one of the assembled apostles. Yet none of his words or deeds are recorded; nor is there anything to indicate that he was prominent among the disciples until, in chap. xii. it is said that when Herod rose up against them he first put James to death. As this was the first of the apostles to suffer martyrdom, so he is the only one of them the manner of whose death is historically certain. All that is commonly believed concerning the others rests on tradition—some of it trustworthy, but much of it uncertain and vague.

JAMES: one of the 12 apostles of Jesus Christ, son of Alpheus: probably not, as some have thought, the James surnamed 'the little' or 'the less,' with reference to his stature. Some, with little reason, suppose that he was the leader in the church at Jerusalem who, after the death of James, son of Zebedee, is spoken of in the Acts and by Paul. Setting this hypothesis aside, nothing is recorded concerning his work as an apostle. But the same thing is true concerning others of the 12, and is no evidence that any of them were unfaithful or inefficient.

JAMES (The Just): first bishop or pastor of the church in Jerusalem: brother of Jesus. When Peter was delivered from prison by the angel he was directed to go at once 'to *James* and to the brethren.' This implies that besides the apostle James whom Herod had just killed, there remained another James who even then was prominent among the Christians. Eight years later, when Paul and Barnabas went to Jerusalem to consult with the church on matters of vital importance, after all parties had spoken, James made an address declaring his judgment. This judgment was unanimously adopted by the church. In the record he is not called the presiding officer, but his address is consistent with the supposition that he was. Paul afterward wrote of James, Peter, and John as the three who at that time were regarded as pillars in the church. Eight years later still, when Paul again visited Jerusalem, he went in at once to James, with whom all the elders or pastors were assembled. Here it is manifest that, by whatever name he may have been called, he was in fact the presiding officer of the church. This being so two other things concerning him clearly appear.

1. Exalted as he was in influence, he is never called an

apostle. In the Acts no title whatever is given him. He is spoken of simply by his name James; and no reason for his prominence in the church is assigned. Paul seems to assert (Gal. i. 19), that he was not an apostle; affirming that, during his (Paul's) first visit to Jerusalem after his conversion, he tarried 15 days with Peter, 'but other of the apostles saw I none, save [or, but only] James, the Lord's brother.'

2. Though never called an apostle, another name is given him which, in connection with his personal excellence, goes far to explain his prominence in the church. Paul calls him 'the Lord's brother.' The New Testament declares repeatedly that the Lord Jesus had brethren according to the flesh. The people of Nazareth knew them and called them by name, 'James and Joses, Simon, and Judas.' The evangelists Matthew, Mark, and Luke testify to their well-known existence, and the apostle John declares also that at first they did not believe in the messiahship of Jesus; but in the Acts they are seen taking their place at once with Mary among the disciples, and Paul ranks them with Peter and others who were prominent in the infant church. These facts show that we are not warranted by the New Testament in striving to explain away Paul's single epithet, 'James, the Lord's brother.'

The New Testament tells nothing concerning the death of James, but Josephus says that he was sentenced by the Sanhedrin to be stoned.

JAMES, The Epistle of: one of the canonical books of the New Testament. Its genuineness is evidenced by its having a place in the Syriac version of the New Testament made about the beginning of the 2d c., and near Jerusalem where James was well known. Clement of Rome, about the same time, probably alludes to it. Origen, 3d c., and Athanasius, 4th c., regarded it as genuine. Eusebius says it was rejected by some; yet he quotes it and calls it Scripture. At length it was almost universally accepted by the ancient churches east and west.

At the Reformation Luther called it 'a strawy epistle,' because as he thought it contradicted Paul's doctrine of justification by faith. But after maturer study he admitted its genuineness, convinced that the contradiction was only apparent. Since Luther's time this supposed contradiction between James and Paul has often been reasserted. But when both writers are understood they are found to agree. Paul first speaks of Abraham at the beginning of his renewed life; James, only after that life had been far advanced: Paul defines justification as the act of God; James regards it as needing to be made visible to men: Paul affirms that works not wrought in faith are insufficient; James insists that a faith which does not produce works is no faith—faith only in name.

In the epistle many things are best understood and most significant when its author is regarded as a man of

just the character ascribed to James and surrounded by just his conditions. In becoming a Christian he continued to be a Hebrew, living chiefly, if not entirely, at Jerusalem. So in his epistle he addresses the 12 tribes of the dispersion, yet draws his intructions and exhortations from the condition of those by whom he was surrounded at home. Though attached to Christ and his church he was also zealous for the Law; naturally, therefore, in his epistle, as his highest estimate of the faith of Christ he calls it 'the perfect law of liberty.' He asks, 'Do not the rich oppress you, drag you to the judgment seat, and blaspheme the excellent name by which you are called?' So in Jerusalem he was surrounded with rich Sadducees who were oppressors, persecutors, and blasphemers of the Lord. As a true Jew, the writer of the epistle often quotes or alludes to the principal books of the Old Testament, from Genesis to Malachi; and from the same source draws his examples—Job, Abraham, Rahab, Elijah, and the prophets. He inculcates, as tests of true religion, righteousness and cheerful activity in performing the duties of life. His style, as seen through the translation, while natural, flowing, and earnest, is adorned with poetic imagery of great variety; and in the original his Greek is commended by critics as elegant and pure.

JAMES I., King of Scotland: 1394–1437, Feb. 20 or 21 (king 1406–37); b. Dunfermline; third son of Robert III., by Annabella Drummond, daughter of Sir John Drummond of Stobhall. His elder brother, David, Duke of Rothesay, having been murdered by his uncle, the Duke of Albany, James became heir to the throne. Fearing that he also might be sacrificed to the unscrupulous ambition of Albany, his father resolved to send him to France 1405, but the vessel in which he embarked was taken by the English, and James was carried to London and sent to the Tower. In 1407, he was removed to Nottingham Castle, where though forcibly detained, he was in all respects treated as a member of the household, by the governor, Sir John Pelham. In 1417 he accompanied Henry V. in his expedition to France. On the death of Robert III., 1406, James became nominal sovereign, but in his captivity the government practically devolved on the Duke of Albany. On his death, 1419, his son Murdoch succeeded to the regency. In 1424 James' long captivity came to an end: on giving hostages for payment of £40,000, he was allowed to return to his kingdom. Previous to leaving England, he married Lady Johanna Beaufort, daughter of the Earl of Somerset, fourth son of John of Gaunt. To the excellent education which he received in England, James was much indebted. His poems, *Christ's Kirk on the Green* (the authorship of which, however, is disputed), and *King's Quhair*, show natural poetic talent. With his reign the indefinite rule of the king and arbitrary authority of the nobles ended

in Scotland, and constitutional monarchy on definite principles and with recognition of popular rights, began With the acts of his first parliament, 1424, the regular series of Scotch statutes may be said to begin. Many excellent laws were passed for regulation of trade, and for the internal economy of the kingdom; and these were administered with a vigor which Scotland had never known before. No sooner was James firmly seated on the throne, than he resolved to execute vengeance on the Albany family. By a parliament at Perth 1425, the two sons of the late Regent Murdoch and his father-in-law, the Earl of Lennox, were found guilty of certain crimes, and immediately beheaded. The next few years of James' reign are among the most peaceful in the history of Scotland previous to the union of the crowns; the efforts of the king being directed to the repression of internal disorders, especially in the Highlands, where scarcely any law except that of the strongest had been known. In 1436 James' eldest daughter, Margaret, was married to the Dauphin of France, afterwards Louis XI. Among those whom the wisely severe policy of the king had offended, was Sir Robert Graham, uncle of the Earl of Strathearn. He had been imprisoned 1425, on the impeachment of the Albany family. By this, or by some real or imaginary injury to his family, Graham was so irritated, that in 1435 he actually used treasonable language to the king himself when presiding in parliament. For this he was banished and his possessions declared forfeited. He retired to the Highlands to brood over a plan of revenge, which circumstances soon put it into his power to execute. In 1437, the court held the Christmas festival at Perth. The king was about to retire for the night, when the sound of men in armor was heard outside the gates. It was Graham, accompanied by 300 armed men. The locks of the chamber-door having been purposely spoiled, Catherine Douglas, with a spirit worthy of her name, thrust her arm into the staple, to make it serve the purpose of a bar; but her arm was broken and the ruffians entered the chamber. The king, who had hidden himself in an aperture under the floor, was discovered, dragged out, and murdered, in the 44th year of his age. Graham and other ringleaders were afterward seized, tortured, and put to death. James was unquestionably the most able of the Stuart family: both his intellectual and his practical ability were of very high order.

JAMES II., King of Scotland: 1430–1460, Aug. 3 (reigned 1437–60); twin son of James I. and Queen Johanna. He was crowned at Holyrood in the sixth year of his age. Sir William Crichton, the chancellor, and Sir Alexander Livingston, contrived to keep possession of the person of the young king and consequently to wield the royal authority until he had reached his 14th year. The power of the House of Douglas had now risen to so

great a height as to almost overshadow that of the crown. In the hope of curbing it, Crichton had treacherously caused William, the young earl, and his brother to be put to death. The policy of the act proved as bad as its spirit, for by the marriage of the heiress of the murdered youth with her cousin the family was restored to more than its former power. The young king, tired of the rule of Crichton, put himself under the control of Douglas. A parliament was held, by which Crichton and Livingston were declared rebels, and their estates forfeited. Under the rule of the earl, the kingdom fell into anarchy, and became one scene of violence and disorder. Douglas, however, maintained the warlike renown of his House; in 1448, the English having invaded Scotland, he gave them battle on the banks of the little river Sark, in Annandale, and defeated them with much slaughter. In 1449, James married Mary, daughter of Arnold, Duke of Gelderland. The character of the king appears to have been much strengthened after his marriage. Like most of the Stuarts, he had great animal courage; he seems to have had also much of his father's clearness of perception in framing laws, and of his energy in enforcing them. Chafing under the sway of Douglas, he resolved to assert his independence. Crichton, who had previously contrived to make terms for himself, was constituted the royal adviser. Douglas, driven from power, formed an alliance with the Earl of Crawford. By the union of these two powerful nobles, it seemed that the royal authority in Scotland had virtually become extinct. James had recourse to what has the seeming of treachery: he invited Douglas to visit him at Stirling Castle, where, picking a quarrel with him on his refusal to break the engagements which he had made with the other nobles, James, in either a real or pretended fit of passion, stabbed him, after which the murder was completed by Sir Patrick Grey. But the power of the Douglas family was not yet broken. Through the aid of the House of York, then dominant in England, and by the martial influence of his name, the heir of the murdered earl was enabled to raise the standard of rebellion at the head of an army of 40,000 men. But James, listening to the wise advice of his councilor Kennedy, soon succeeded in quelling this insurrection. Douglas was compelled to flee; and his lands were granted to the Earl of Angus. In 1460, James, taking advantage of the War of the Roses, then wasting the strength of England, infringed an existing truce with England, by laying siege to the castle of Roxburgh, in s. Scotland, then held by the English. While he was standing beside one of the rudely made cannon of that time, the gun burst, and a fragment striking him, produced almost immediate death.

JAMES III., King of Scotland: 1452, June 1—1488, June 11 (king 1460–88): son of James II. and Mary of Gelderland. On the death of his father the government

appears to have been conducted by his mother, guided by the wisdom of Bp. Kennedy. On the death of the bishop, 1465, the young king fell into the hands of Lord Boyd and his family; and 1467, so great influence had they acquired, that James gave his sister in marriage to Sir Thomas Boyd, son of Lord Robert, Sir Thomas being at the same time created Earl of Arran. On the king's marriage, however, 1469, with Margaret of Denmark, power changed hands: Lord Boyd was obliged to flee; and even Arran was driven into exile, in which condition he died. In 1474, his widow married Lord Hamilton; of which marriage were born James, created Earl of Arran 1503, and Elizabeth, who married Matthew, Earl of Lenox. James was all his life under the influence of favorites. Conspicuous among these was a man named Cochran, originally a mason. Through his means, the Duke of Albany, brother of James, was compelled to flee from the kingdom, having been charged with witchcraft; while the Earl of Mar, another brother of the king, was, it is said, put to death on the same absurd accusation; though another account is that he died under circumstances that caused suspicion of his murder. The rule of Cochran and other low-born favorites became intolerable to the haughty Scotch nobility. Disputes having arisen with England, and an English force having advanced on Berwick, James put himself at the head of an army to oppose the invaders. Angus, Crawford, Argyle, and others resolved to profit by this opportunity to rid themselves of the obnoxious favorite. They met in council to deliberate upon their plans: it was on this occasion that Angus acquired his well-known soubriquet of 'Bell the Cat.' The result was, that Cochran and five other of the leading favorites were seized and summarily hanged, and the king himself was carried a captive to the castle of Edinburgh. The banished Duke of Albany had joined the English army. On a treaty being made, he was, by some unknown means, restored to his brother's favor; he appeared at Edinburgh, demanded and secured the king's liberty, and for a time administered the government. He did not long hold it, however, but was compelled again to flee to England. In 1487, Margaret of Denmark died. James' love of pursuits which, for the age in which he lived were intellectual, brought on him the contempt of a warlike and illiterate nobility—a contempt on which the weakness of his moral character imposed no check. A conspiracy, whose origin is obscure, ended in a rebellion, having for its avowed object the dethronement of the king. Many of the peers, however, remained loyal, so that James was enabled to put himself at the head of a considerable force. But, mainly through the cowardice of the king, the royal army was defeated at Sauchie, 1488, June 11, James escaping from the field, was thrown from his horse, carried to a cottage, and there discovered by one of the rebels, and murdered.

JAMES IV., King of Scotland: 1472, Mar. 17—1513, Sep. 9 (reigned 1488–1513); son of James III. and Margaret of Denmark. A movement, headed by the Earl of Lenox, having for its object the subversion of the new government, was soon quelled; and the rule of the young king gave promise of being both vigorous and popular. The avarice of the preceding reign was followed by a profusion which conciliated the nobles; while the king's personal beauty and open manner won the hearts of the common people, and caused them to overlook the libertinism of his conduct. The naval exploits of Sir Andrew Wood of Largo, in the beginning of this reign, are worthy of note: with a greatly inferior force, he twice defeated the English; on one occasion, capturing five of their ships of war. Instead of avenging this defeat by force of arms, Henry VII, then reigning in England, wisely resolved to endeavor to win Scotland by conciliation and policy. He proposed a marriage between James and his daughter Margaret, but his wise schemes were long frustrated by the gold and intrigue of the king of France. But at length the prudence of Henry prevailed, and 1503, James married Margaret of England, thus opening the way for the ultimate accession of the Stuarts to the throne of England. By a treaty then entered into between England and Scotland, the first peace since 1332 was established between the two countries. The king of England saw what none of his predecessors had been able to see—that he could easily gain by policy what it was hopeless to attempt to seize by force. Had he lived longer, a lasting amity might have been established between the two countries; but his son and successor, Henry VIII., was of far different spirit. The English treaty was followed by a period of almost unexampled peace and prosperity; but by the death of Henry VII., 1509, all this fair prospect was destroyed. When Henry VIII. had been two years on the throne, a rupture took place between the two kings. James had demanded reparation for an alleged outrage on the Scottish flag; Henry had returned a contemptuous answer. He had further irritated the Scotch king by countenancing certain English border chieftains who had been accessory to the murder of Sir Robert Ker; he had also declined to deliver a legacy of jewels bequeathed to Queen Margaret by her father. Long and angry negotiations followed, which ended in James' rash and fatal invasion of England in the summer of 1513. The disastrous battle of Flodden (q.v.), was fought Sep. 9. The defeat of the Scotch was due to the rash bravery of James, whose body was found on the field after the battle.

JAMES V., King of Scotland: 1512, Apr. 10—1542, Dec. 14 (king 1513–42); b. Linlithgow; son of James IV. and Margaret of England. The period of his long minority is one of the gloomiest in Scottish history. Such was the lawless state of the country, that it was unsafe to

pass from one town to another except in armed companies. The Duke of Albany was chosen regent by the parliament, but his government was almost powerless, owing chiefly to the jealousy and enmity of the Earl of Angus, who had married the queen-mother. Ultimately, Angus prevailed, and the duke retired to France. For a while, the Angus branch of the Douglas family ruled Scotland in the same manner as the elder branch had ruled it in the beginning of the reign of James II. In his 17th year, the king resolved no longer to brook the authority of the earl, and escaped from his custody. Angus and his family were banished, and their estates declared forfeited. In 1536, James visited the court of France; and 1537, Jan. 1, he was married to Magdalen, daughter of Francis I. This amiable queen lived but a few weeks; and in the same year, James was again married. His second wife was Mary of Lorraine, daughter of the Duke of Guise. Henry VIII. having declared his independence of the pope, became desirous that his nephew James should follow his example; but James remained true to his ancestral faith. The king had two sons by Mary of Guise, but both died in infancy, within a few days of each other —an event which seems to have greatly affected the mind of James. With the view of gaining his nephew over to his ecclesiastical views, Henry proposed that they should have an interview at York, and actually went to that city, and remained six days, expecting the arrival of James, who never came. This real or fancied neglect enraged Henry. In 1542, the English having made an incursion across the border, were attacked and defeated with great loss by the Earls of Huntly and Home. To avenge this defeat, Henry sent the Duke of Norfolk into Scotland with an army of 20,000 men.

Negotiations for peace having failed, James raised an army of 30,000 men to oppose Norfolk. The spread of the Reformation had now begun to divide the kingdom; the nobles being mostly on the reformed side, while the king sided with the clergy. When the Scottish army had reached Fala, news arrived of Norfolk's retreat. The nobles, actuated either by disloyalty, or by thoughts of Flodden, declined to follow the king in an invasion of England, upon which he was bent. While this controversy was pending between James and the nobles, a report arose that Oliver Sinclair, a royal favorite, had been appointed to the chief command. This completed the tumult and disorder of the army, and in this disorganized state it was attacked by Dacre and Musgrave, two English leaders, at the head of 300 men. The Scotch were utterly routed. This dishonor to his arms seems to have broken the heart of James. He shut himself up in Falkland Palace, where he died, 7 days after the birth of his unfortunate daughter Mary, Queen of Scots (q.v.).

JAMES I., King of England, and VI. King of Scotland; 1566, June 19—1625, Mar. 25 (reigned, England 1603-

1625; king of Scotland 1567–1625); b. in the castle of Edinburgh; only son of Mary, Queen of Scots, and Henry Lord Darnley. On his mother's forced abdication, James was proclaimed king of Scotland. During his infancy, the kingdom was under the regency successively of the Earl of Murray (assassinated 1570), the Earl of Lennox (killed 1571), the Earl of Mar (d. 1572), and the Earl of Morton (beheaded 1581). The direction of James' childhood developed principally on the Earl of Mar. His classical education he received from the famous George Buchanan. In 1578, the Earl of Morton, then regent, was driven from power, and James nominally assumed direction of affairs. But the new government was unpopular, and Morton soon succeeded in re-establishing himself. His fall was, however, ultimately effected by the united influence of the Duke of Lennox and of the Earl of Arran. Morton was condemned and put to death on the charge of having been accessory to the murder of Darnley. After his death, Lennox and Arran ruled for some time without control. 1582, Aug. 12, however, a party of the nobles seized the king at Ruthven Castle; and by authority thus acquired, they imprisoned Arran, and banished Lennox. In 1583, a counterplot, restored James to freedom; he immediately restored Arran to power, and the confederate lords fled to England. In 1585, through connivance of Queen Elizabeth, they returned, and with an army of 10,000 men, obliged James to capitulate in Stirling Castle. Arran was again banished. In 1586, Queen Mary, then a prisoner in England, was condemned by the English court to be beheaded. Though James remonstrated strongly, he nevertheless, after the execution of his mother, concluded an offensive and defensive alliance with England. In the winter of 1589, James went to Denmark, where he married Princess Anne, daughter of Frederick II., king of that country. 1591–94, the kingdom was disturbed by various treasonable attempts by the Earls of Bothwell, Huntly, and other Rom. Cath. lords. It was not till James had marched against Huntly in person that these disturbances were suppressed. Long ecclesiastical disputes followed between king and clergy. In 1600, occurred the Gowrie Conspiracy (q.v.). By the death of Elizabeth 1603, James succeeded to the throne of England. Soon after his removal to London, he became unpopular with his new subjects. The anger of the Rom. Catholics at the severities used toward them was the cause 1605 of the famous Gunpowder Plot (q.v). Time did not increase the popularity of James with any class of his subjects. Weak and good-natured, he impoverished his exchequer to enrich parasites; he degraded the prerogative of the crown by the sale of titles of dignity; the title of baronet, which he originated, could be bought for £1,000, a barony for £5,000, and an earldom for £20,000. A Scotchman of the name of Carr became the royal favorite

about 1607; honors and emoluments were showered on him, and 1613 he was created Earl of Somerset. In his turn, Somerset gave place to Buckingham. Under these minions, the name and power of England, so formidable under Elizabeth, sank to insignificance. In 1617, James revisited Scotland; a visit which his angry disputes with the clergy did not give him much leisure to enjoy. In 1619, his eldest son, Henry, Prince of Wales, died, to the great grief of the nation. James had set his heart upon effecting a marriage between his son Charles (now Prince of Wales) and a Spanish princess. For some time it seemed that his design would succeed; and 1623, Charles actually went to the court of Spain, with Buckingham, to prosecute his suit. Buckingham, however, having quarrelled with the leading men of the Spanish court, the negotiation ultimately failed through his pique, to the intense disgust of the English nation. A war with Spain was the result.—James was aptly termed by Sully 'the wisest fool in Christendom.' 'He was indeed,' says Macaulay, 'made up of two men, a witty, well-read scholar, who wrote, disputed, and harangued, and a nervous, drivelling idiot who acted.' James had some shrewdness and knowledge of character, but had no breadth of view or steadfastness in action; reckless and obstinate in small things, he was irresolute in greater. He was devoid of courage, was overwhelmed in self-conceit of his own intellectual powers, and was convinced of the divine right of kings. He disliked Calvinism and Presbyterianism, and sought to introduce into Scotland a modified Episcopacy. He thought it shrewd to favor all parties in turn, including the Romanists, and to play off one against the other. His fussy self-importance and his elaborate absurdity make him a dismal and ridiculous figure in history. His reign is interesting to the student of English constitutional history, as it was during it that parliament took its first decided stand in its long contest with the crown. The parliament of 1621 especially is memorable on this account.

JAMES II., King of England, and VII., King of Scotland; 1633, Oct. 15—1701, Sep. 6 (reigned 1685–88); b. at the palace of St. James'; second surviving son of Charles I. and Henrietta Maria. In 1643, he was created Duke of York. In 1648, during the civil war, he made his escape to France. He served in the French army under Turenne; but on peace being made with Cromwell, he was obliged to leave both the army and territory of Louis XIV. He then entered into the military service of Spain. At the Restoration he was made lord high admiral of England, twice commanding the English fleet in the ensuing wars with the Dutch. In 1660, he married Anne, daughter of Lord Chancellor Hyde. On her death, 1671, James avowed his conversion to popery. On the passing of the Test Act (q.v.) 1673, requiring from all officials declarations which could not be made by Rom.

Catholics, he was obliged to resign office. 1673, Nov. 21, he married Mary Beatrice, daughter of the Duke of Modena. During the great irritation against the Rom. Catholics which arose in England on the publication of Titus Oates' supposed discoveries, James, as Duke of York, resided for a short while on the continent. The bill for his exclusion from the throne was twice read before the house of commons, and prevented from passing only by the prorogation of parliament, 1679, May 26. In 1680, the Exclusion Bill passed in the house of commons, but was rejected in the house of lords. On his return from abroad, and while the Exclusion Bill was before parliament, he was sent to govern Scotland, where he persecuted the Covenanters. On the death of Charles II., 1685, Feb. 6, James succeeded to the crown without opposition. He had been but few hours a king when he violated the fundamental laws of the constitution by continuing the levy of customs, settled on the late king for life only, without the authority of parliament. At war with his parliament, in order to obtain money, James was forced to become the temporary vassal and pensioner of Louis XIV. of France. In Passion Week 1685, the rites of the Church of Rome were openly celebrated at Westminster with full splendor. In the same year, the suppression of the Duke of Monmouth's rebellion in England, and that of the Earl of Argyle in Scotland, was followed by the most frightful severities. On the western circuit alone, well known as the Bloody Assize, presided over by the infamous Jeffreys, 320 persons were hanged. On the meeting of parliament 1685, Nov. 9, James requested extra supplies to maintain a standing army, which was a favorite scheme of his. He noticed in his speech, that in some recent appointments he had thought fit to dispense with the Test Act. After a stormy debate, government was finally beaten on the question of supply. To aid his endeavors in favor of the Rom. Catholics James resolved to try to conciliate the Puritans, much as he hated them. On the 4th of April 1687, appeared the memorable Declaration of Indulgence, in which he announced his intention of protecting dissenters in the free exercise of their religion; and the nation beheld the extraordinary spectacle of the house of Stuart leagued with republican and regicide sects against the old Cavaliers of England. The attempt to conciliate the Puritans was naturaly unsuccessful; and 1687, March, it began to be evident that the war between king and church must soon reach a climax. At that time a vacancy having occurred in the presidency of Magdalen College, Oxford, a royal letter came down recommending Anthony Farmer, Rom. Catholic, to the vacant place. For Farmer was afterward substituted Parker, Bishop of Oxford, known to be a Rom. Catholic, though not avowed; besides which, he labored under other legal disqualifications. The fellows of the college declined to elect him.

A special ecclesiastical commission was then sent to Oxford, escorted by three troops of cavalry with drawn swords. Parker was installed, the fellows expelled, and declared for ever incapable of holding any church preferment. In 1688, Apr. 27, James published a second Declaration of Indulgence; this he ordered to be read in all the churches in the kingdom. The order was generally disobeyed by the clergy, and seven of the bishops having ventured on a written remonstrance, were committed to the Tower on a charge of seditious libel. June 10 of the same year James' luckless son, known in history as *The Pretender*, was born: see STEWART, THE FAMILY OF: JACOBITES (in British history). The history of the trial and acquittal of the seven bishops, 1688, June 29, forms one of the most glowing passages in the splendid narrative of Macaulay. On the night of the same day, an invitation was dispatched to William, Prince of Orange, signed by seven leading English statesmen, to come over to England to occupy the throne. Nov. 5, William landed at Torbay with 14,000 men. James found himself deserted by the nobility, gentry, and army; even his own children turned against him. He retired to France, where he was hospitably received by Louis XIV., who settled a revenue upon him. Early in March in the following year, he made a hopeless attempt to regain his throne by invading Ireland with a small army, with which he had been furnished by the king of France; but his irresoluteness led to his total defeat at the battle of the Boyne (q.v.) 1690, July 1. He escaped to France, whence Louis XIV. projected two expeditions against England in his favor—one 1692; the other to follow an assassination 1696, Feb. 10; both plots were discovered and foiled.

JAMES, BUSHROD WASHINGTON, M.D., American oculist: b. Philadelphia, 1836, Aug. 25; d. 1903. He was graduated from the Homœopathic Medical College of Pennsylvania in 1857, became well known as a practitioner, was elected president of the Pennsylvania Homœopathic Medical Society in 1873, of the American Institute of Homœopathy in 1883, and in 1896 was vice-president of the Homœopathic Medical Congress held at London, England. His publications include: *American Climates and Resorts* (1889); a manual of climatology (1889); *Alaskana* (1892); *Echoes of Battle* (1895); and *Alaska: Its Neglected Past and its Brilliant Future* (1897; rev. ed. 1901).

JAMES, CHARLES, English novelist and playwright: b. London, 1858, Dec. 26. He received a private education, became lieutenant-colonel of the Royal West Kent regiment, and published: *A Bird of Paradise* (1889); *The New Faith* (1890); *Honors Easy* (1892); *A Worker in Iron* (1894); *At the Sign of the Ostrich* (1895); and *Where Thames is Wide* (1896); etc.

JAMES, Edmund Janes, ph.d., ll.d., American college president: b. Jacksonville, Ill., 1855, May 21. He was educated at Northwestern University and at Harvard, was principal of the high schools at Evanston and Normal, Ill. (1878–82), professor of public finance and administration in the Wharton School of Finance and Economy of the University of Pennsylvania (1883–95), and professor of political and social science in the university (1884–95). In 1896 he became professor of public administration in the University of Chicago and director of the extension division; in 1902 president of the Northwestern University; and in 1904 president of the University of Illinois. He became president of the American Academy of Political and Social Science in 1889, and in 1891–5 was president of the American Society for the Extension of University Teaching. His writings include: *The Legal Tender Decisions* (1887); *The Canal and the Railway* (1890); *The Federal Constitution of Germany* (1890); *The Growth of Great Cities in Area and Population* (1900); *Federal Constitution of Switzerland* (1890); *Education of Business Men in Europe* (1899); *Charters of the City of Chicago* (1900); *Government of a Typical German City—Halle* (1900); etc.

JAMES, Florence, 'Florence Warden,' English novelist: b. Hanworth, Middlesex, 1857, May 16. She taught as a governess, 1875–80, and was on the stage, 1880–5. Her novels, many of which are strongly sensational in tone, have been very popular in this country as well as in England. They are published under the pseudonym 'Florence Warden,' and among them are: *At the World's Mercy; The House on the Marsh,* which established her reputation; *A Prince of Darkness; Scheherezade; A Perfect Fool; Pretty Miss Smith; A Lady in Black* (1897); *A Very Rough Diamond; Morals and Millions; One too Often* (1901); *A House with a History; No. 3 The Square* (1903).

JAMES, George Francis: editor, author, and educator; b. Normal, Illinois, 1867, Aug. 18. After gaining his elementary training in the public schools of Evanston, Ill., and his secondary training in the Illinois Normal Univ. and in the Northwestern Academy, he studied for three years at the Northwestern Univ. and two years at the Univ. of Michigan, receiving from the latter institution his bachelor's degree in 1886, and his master's degree in 1887. He was after that, in succession, classical teacher in the Decatur (Ill.) high school, instructor in modern languages and the history of education in the Peabody Normal College, and secretary of univ. extension work in Philadelphia. After two years of graduate study in France and Germany, he gained the degree of doctor of philosophy from the Univ. of Halle in 1894. Later he made special studies in education in England, France, and Italy and returned to the United States, devoting himself to teaching in normal

schools, colleges, and univ., being now dean of the college of education of the Univ. of Minnesota. He has written and edited various volumes, including *The Handbook of Univ. Extension* (1892); *Proceedings of the First National Conference on Univ. Extension* (1892); *Die Ethik Greens* (1894); *Unveiling of the Logan Monument* (1899); and *Report of the Chicago Educational Commission* (1899).

JAMES, George Payne Rainsford, English novelist and historian: b. London, 1801, Aug. 9; d. Venice, 1860, May 9. As a young man he traveled widely on the Continent. He began his writing under the influence of Scott's novels, and wrote in all over 100 novels; he was also known as the author of popular historical books, and in 1839 was appointed historiographer royal. in this capacity writing *History of the United States Boundary Question* and *The Corn Laws.* In 1850 he was British consul in Massachusetts, two years later was transferred to Norfolk, Va., and in 1856 became consul general at Venice. His novels include: *Richelieu* (written 1825, published 1829); *Darnley* (1829); *De-Lorme* (1830); *Philip Augustus* (1831); *Henry Masterton* (1832); *The Gypsy* (1835); *Attila* (1837); *Man at Arms* (1848); *King's Highway* (1848); *Agincourt* (1844); *The Smuggler* (1845); *Ticonderoga* (1854). His historical works include: *Memoirs of Great Commanders* (1832); *Life of the Black Prince* (1836); *Life of Richard I.* (1842–9). James' novels were very popular when first written, and a new edition appeared in 1903.

JAMES, George Wharton, American explorer, lecturer and ethnologist: b. Gainsborough, Lincolnshire, England, 1858, Sept. 27. He has spent many years in making geological and other researches in California, and elsewhere in the southwestern United States, and is a member of various learned societies in this country and England. He has published: *The Lick Observatory* (1888); *Nature Sermons; Picturesque Southern California; Missions and Mission Indians of California; From Alpine Snow to Semi-Tropical Sea; In and Around the Grand Canyon* (1900); *Indian Basketry* (1900); *The Indians of the Painted Desert Region* (1903); *How to Make Indian and Other Baskets* (1903); *In and Out of the Old Missions* (1905); *The Wonders of the Colorado Desert* (1906); etc. From 1904–5 he was connected with the editorial staff of *The Craftsman.*

JAMES, Henry, American Swedenborgian theologian: b. Albany, N. Y., 1811, June 3; d. Cambridge, Mass., 1882, Dec. 18. He was educated at Union College and Princeton Theological Seminary, traveled abroad and became a Sandemanian and later a Swedenborgian. He subsequently lived in New York, Newport, R. I., and lastly at Cambridge. Among the most noted of his works

on morals and religion are: *What is the State?* (1845); *Moralism and Christianity* (1852); *Lectures and Miscellanies* (1852); *The Nature of Evil* (1855); *Christianity the Logic of Creation* (1857); *Substance and Shadow* (1863); *The Secret of Swedenborg* (1869). His *Literary Remains* edited by William James, appeared in 1885.

JAMES, Henry, American novelist and essayist: b. New York, 1843, April 15. He was the son of a clergyman, Henry James (q.v.), who gained fame as a writer on philosophico-theological subjects, first from the Sandemanian, and afterward from the Swedenborgian standpoint. The novelist, known until his father's death as Henry James, Junior, was educated under his father's guidance in New York, Geneva, Paris, and Boulogne. He lived in Europe with his parents during the years 1855–9, and after his return to the United States studied in the Harvard Law School in 1862. He began his literary career about 1865 as a contributor to American magazines, and soon afterward published *The Story of a Year, a tale of the American Civil War.* In 1869 he took up his residence in Europe, and since then he has resided chiefly in England and Italy. *Roderick Hudson* (1875) was his first long novel. His subsequent novels include: *Watch and Ward* (1878), originally published in 1871 in the *Atlantic Monthly; The American* (1877), by some regarded as his best; *Daisy Miller* (1878); *The Europeans: a Sketch* (1878); *Confidence* (1880); *Washington Square* (1880); *A Bundle of Letters* (1880); *Diary of a Man of Fifty* (1880); *The Portrait of a Lady* (1881; *The Bostonians* (1886); *Princess Casamassima* (1886); *The Tragic Muse* (1892); *The Other House* (1896); *The Spoils of Poynton* (1897); *What Maisie Knew* (1897); *The Awkward Age* (1899); *The Sacred Fount* (1901); *The Wings of a Dove* (1902); *The Better Sort* (1903); *The Ambassador* (1903); *The Golden Bowl* (1905). He has also written a great many short stories, among which are: *A Passionate Pilgrim, and other Tales* (1875); *Pension Beaurepas* (1878); *An International Episode* (1879); *The Madonna of the Future, and Other Tales* (1879); *The Siege of London* (1883); *The Point of View* (1883); *Tales of Three Cities* (1884); *The Author of Beltraffio, and other Stories* (1885); *Stories Revived* (1885); *The Aspern Papers, and other Stories* (1888); *The Reverberator* (1888); *A London Life, and other Stories* (1889); *The Lesson of the Master, and other Stories* (1892); *The Real Thing, and other Tales* (1893); *Picture and Text* (1893); *The Private Life* (1893), a collection of stories; *The Album* (1894); *The Reprobate* (1894); *Tenants* (1894); *Disengaged* (1894); *Terminations, and other Stories* (1896); *In a Cage* (1898); *The Two Magics* (1898), consisting of two stories; and *The Soft Side* (1900), a series of stories. In very many of his

stories he describes the life of Americans in Europe, and they depend for much of their interest upon the contrasts between American and European character and institutions. Though a very prolific writer, he is never careless, his style being always felicitous, while in respect to the substance of his work he ranks as the subtlest of American novelists. A dramatic version of *The American* was produced in London in 1891, but neither it nor his subsequent play *Guy Domville* (1895) was successful. He has turned his intimate knowledge of modern French literature to good account in his volume of essays entitled *French Poets and Novelists* (1878). Other works of a similar kind are *Transatlantic Sketches* (1875); *Portraits of Places* (1884); *A Little Tour in France* (1884; new ed. 1900); *Partial Portraits* (1888); *Essays in London and Elsewhere* (1893); *Question of Our Speech*, and *The Lesson of Balzac* (1905). He also contributed the volume on *Hawthorne* (1879) in the *English Men of Letters* series, and in 1903 published *William Wetmore Story and his friends*, a notable biography.

JAMES, John Angell, D.D.: 1785, June 6—1859, Oct. 2; b. Blandford, Dorsetshire, England: Congregational minister. He studied a short time at a dissenting college at Gosport, and was placed on the 'preaching list' at the age of 17. At the age of 20, he was settled as pastor of the 'church meeting in Carr's Lane,' Birmingham, where he remained till his death. For the first seven years his preaching drew little attention; then suddenly he became very popular, and drew great crowds wherever he officiated in England. In the course of years, Angell James came to be considered the most important and powerful public man in connection with his own denomination; and on account of his 'evangelical' views of religion, he was much esteemed also both by the Low-Church party in the English Establishment, and generally in Scotland and America. He published a multitude of sermons, tracts, addresses, and small religious volumes (the best known being the *Anxious Inquirer*) which had—and some of them still have—a vast circulation. He received the degree D.D. from the College of New Jersey, and from the Univ. of Glasgow. See Dale's *Life and Letters of John Angell James* (Lond. 1862).

JAMES River: formed by the union of the Jackson and Cowpasture streams, rising near the middle of Virginia, and having its entire course in that state. It flows e.s.e., passing through Lynchburgh and Richmond; and widening into an estuary for the last 60 m. of its course, it falls into the Atlantic at the s. extremity of Chesapeake Bay. It is 450 m. in length, and is navigable to Richmond, 150 m. from its mouth. Its chief tributaries are the Appomattox on the right, and the Chickahominy on the left bank, both made

historical by events in the war of secession. It was at Jamestown (q.v.), 32 m. from the mouth of this river, that the first English settlement in America was made, 1607. By the James river and Kanawha canal, which extends westward along the upper course of the river, from Richmond to beyond the Blue Ridge, the navigation of the James is carried into the centre of Virginia.

JAMES, THOMAS LEMUEL, LL.D.: banker: b. Utica, N. Y., 1831, Mar. 29. He received a common-school and academic education, learned the printer's trade, bought the *Madison County Journal* (whig) of Hamilton, N. Y., 1851, merged it with the *Democratic Reflector* as the *Democratic Republican* 1856, and followed journalism 10 years; became inspector of customs in New York 1861, weigher 1864, deputy collector 1870, postmaster 1873 and 77, and postmaster-gen. of the United States 1881, retiring from the latter office 1882, Jan. 4. While in the custom-house he reorganized the methods of business in his departments, to the manifest improvement of the service; in the New York post-office he multiplied the local deliveries, expedited the foreign mail service, and added largely to the security of the mails; and as postmaster-gen. effected an annual saving of more than $2,000,000 by reductions in the notorious 'star-route' and steamboat services, and instituted a thorough investigation into the abuses and frauds of his dept. which resulted in the 'star-route' trials. On retiring from public office he became pres. of the Lincoln national bank and the Lincoln Safe-deposit Company of New York. He received the degree LL.D. from Madison Univ. 1883, and St. John's College 1884.

JAMES, WILLIAM, American psychologist and philosopher: b. New York, 1842, Jan. 11. He is the son of Henry James, theologian (q.v.), and brother of Henry James, novelist (q.v.). He was educated in private schools and by tutors in New York and abroad, studied in 1861–3 at the Lawrence Scientific School of Harvard University, accompanied the Thayer expedition to Brazil in 1864–5, was graduated from the Harvard Medical School in 1870, in 1872 was appointed instructor in anatomy and physiology at the school, and in 1876 assistant professor of physiology. In 1885 he was appointed assistant professor of philosophy in the university, in 1889 professor of psychology, and subsequently professor of philosophy. He was Gifford lecturer on natural religion in the University of Edinburgh in 1899–1901. His best known work has been done in the domain of analytical psychology, in which he won European recognition. His works are marked by a most readable style and skilful exposition of different topics. He was a founder of the American Society for Psychological Research in 1884, and published: *Principles of Psychology* (1890); and *Psychology, Briefer Course* (1892), both popular text-books; *The Will to Believe* (1897);

*Human Immortality* (1898); *Talks to Teachers on Psychology* (1899); and *The Varieties of Religious Experience* (1902).

JAMES FREDERICK EDWARD STEWART: see STUART, THE FAMILY OF: JAMES II. (of England): JACOBITES.

JAMES ISLAND: one of the group of sea islands belonging to Charleston co., S. C.; s. of Charleston harbor and Ashley river; extending from the harbor on the n.e. to Stone Inlet on the s.w. Before the civil war it was noted for large production of the high-grade sea-island cotton, and during the war the battle of Secessionville (1863, June 11) and other engagements were fought on it. Pop. (1900) 2,570.

JAMESON, *jā'mė-son*, ANNA (MURPHY): English authoress: 1794, May 19—1860, Mar. 17; b. Dublin; daughter of Mr. Murphy, a painter. In 1825 she married Mr. Jameson, a barrister, but afterward separated from her husband, and applied herself to literature. Her principal works are—*Diary of an Ennuyée* (1826); *Love of the Poets* (1829); *Characteristics of Shakespeare's Women* (1832); *Memoirs of the Early Italian Painters*, etc. (1845); *Sacred and Legendary Art* (1848); *Legends of the Monastic Orders* (1850); *Legends of the Madonna* (1852); *Commonplace Book of Thoughts, Memories, Fancies* (1854); and *The Scriptural and Legendary History of our Lord*, etc., *as represented in Christian Art* (1860). In her writings Mrs. Jameson evinces a fine fancy, a delicate, womanly perception of the beautiful, and a genuine poetic enthusiasm. Mrs. Jameson in her series of *Sacred and Legendary Art*, rendered a distinct service to all students in that department. She brings a fine taste and a penetrating judgment to the guidance of her readers. In her later works she dealt with social questions and great moral interests, in a manner vigorous, temperate, and clear—e.g. *The Relative Social Position of Mothers and Governesses*. The *Memoirs of the Life of Mrs. Jameson* appeared 1878.

JA'MESON (or JAMESONE), GEORGE: prob. 1587–1644; b. Aberdeen: Scotch portrait-painter, called by Walpole *the Van Dyck of Scotland*. Of his early history, nothing is known. He was at Antwerp 1616, studying under Rubens; had Van Dyck as fellow-pupil, and returned to Scotland 1628. He was patronized first by Sir Colin Campbell of Glenorchy, for whom he painted many portraits of the kings and queens of Scotland; among others, 'Robert Bruce' and 'David Bruce.' His great talents were soon acknowledged, and he was largely patronized by the nobility, and 1633 Charles I. sat to him. He died at Edinburgh. Though the pupil of Rubens, and associate of Van Dyck, his productions bear very little resemblance to those of either of these great masters; distinguished for their clearness of out-

line, delicacy, and softness of shading, and beauty of color, they have neither the richness of the former nor the vigor of the latter. Though celebrated only as a portrait-painter, he has left numerous historical, miniature, and landscape pieces. His productions are very numerous; the largest collection is in the possession of the Earl of Breadalbane; and many others of the Scotch nobility possess paintings by him; there are also several in the halls of the Univ. of Aberdeen.

JAMESON, John Franklin, ph.d., ll.d., American historical writer: b. Boston, 1859, Sept. 19. He was graduated from Amherst College in 1879 and was professor of history at Brown University 1888–1901. He has been managing editor of the *American Historical Review* from 1895 was head of the department of history at the University of Chicago from 1901–5 and since 1905 has been director of the department of historical research in Carnegie Institution. He has published *History of Historical Writing in America* (1891); *Dictionary of United States History* (1894); etc.

JAMESON, Leander Starr, Scottish physician, administrator, and freebooter: b. Edinburgh, 1853, Feb. 8. He studied medicine in Edinburgh and London, began professional practice at Kimberley, Cape Colony, in 1878, in 1891 became administrator of Rhodesia for the British South Africa Company, and in 1895 led the now well known raid into the Transvaal. During disturbances between the Boers and the Uitlanders, or foreigners, in the South African Republic, Jameson had, by order of Cecil Rhodes (q.v.), then premier at the Cape, assembled a Rhodesian military force on the Transvaal border, to act in case of emergency. On December 29, with 600 troopers, Jameson, proceeding on his own judgment, entered the South African Republic for the support of the Uitlander party. His force was compelled to surrender to the Boers at Doornkoop on 1896, Jan. 2. Jameson, with his officers, was handed over by President Kruger to the British government for trial. He was sentenced, May 1896, to ten months' imprisonment, but in December was released because of illness. In 1897 he returned to Rhodesia, and in the second Boer war served in the English army. Jameson's surrender was followed by a congratulatory message to Kruger from the German emperor which for a time threatened serious consequences. In 1900 he was elected a member of the Cape legislative assembly for Kimberly; was appointed director of the De Beers Consolidated Company in 1900, and of the British South Africa Company in 1902. In 1904 he became premier of Cape Colony but resigned 1908, January.

JAMESON, Patrick Henry, American physician: b. Monroe Township, Jefferson County, Ind., 1824, April 8. At 19 he went to Indianapolis, taught school there

four years, studying medicine meanwhile, and was graduated from Jefferson Medical College, Philadelphia, in 1849. He then returned to Indianapolis, where he became very prominent as a physician. During the Civil War he served as military surgeon and was commissioner of the Indiana hospital for the insane, 1861–80. He was likewise active in the establishment of the Indianapolis city hospital and in the organization of the University of Indianapolis, and was for 30 years a director of Butler College, at Indianapolis. From 1863 to 1869 he was a member of the Indianapolis common council and compiled the city ordinances in 1865. He has published *Memoirs of Prominent Physicians of Indianapolis.*

JA'MESON, Robert: regius professor of natural history in the Univ. of Edinburgh: 1774, July 11—1854, Apr. 28; b. Leith, Scotland. He went 1800 to Freyberg, to study nat. history under Werner; and was elected 1804 to the professorship in the Univ. of Edinburgh. In 1809, he published *Elements of Geognosy*, in which he gave a comprehensive exposition of the Neptunian theory as modified by Werner. In 1819, he founded, with Sir David Brewster, the *Edinburgh Philosophical Journal*, and 1826 the *Edinburgh New Philosophical Journal*, of which he was the editor till his death. Others of his principal works are: *System of Mineralogy* (1804); *Mineralogical Description of the County of Dumbarton* (1805); *Manual of Minerals and Mountain Rocks*, etc. (1821); *Elements of Mineralogy* (1837). He was a fellow of almost all the learned societies of Europe.

JAMESONITE, n. *jām'sŭn-īt* [after Prof. *Robert Jameson*]: an ore consisting principally of the sulphides of lead and antimony.

JAMES, ST., Liturgy of. See Liturgy.

JAMES'S, ST., PALACE: large inelegant brick structure in London, fronting toward Pall Mall. It succeeded Whitehall as the London residence of the British sovereigns, and remained as such from William III. to Victoria. It was reconstructed and made a manor by Henry VIII., having before been a hospital dedicated to St. James; Henry also annexed to it a park, which he inclosed with a brick wall, to connect St. James's with Whitehall, then the royal residence. Additions and improvements gradually made, totally changed the original palace, so that, at present, little of the old structure remains. In 1837, the royal household was transferred to Buckingham Palace, and St. James's is now used only for levees and drawing-rooms.—The Court of St. James's is the usual designation of the British Court.

St. James's Park lies southward from the palace, and covers 87 acres. Within the last 40 years, it has been greatly improved, and is now richly embellished with avenues of trees, and a fine piece of water in the centre stocked with waterfowl. On the e. side is *the*

*Parade*, where the body-guards on duty are mustered, and where the regimental bands perform in fine weather. On the outskirts are the Buckingham and St. James's Palaces, Stafford House, Marlborough House, etc.

JAMES'S BAY: southerly arm of Hudson's Bay, lat. 51° to 55° n., and in long. 79° to 82° 30′ w. It is so beset with islands, that its navigation is more dangerous than that of the other divisions of the same inland sea. Near its s. extremity is Moose Factory, the most important station, next to York Factory, of the Hudson's Bay Company on the coast.

JAMESTOWN, N. Y.: city, in Chautauqua co., on Conewango creek, an outlet of Chautauqna Lake, and on the Erie, and the Jamestown & C. L. railroads, 70 m. by rail s.w. from Buffalo. Lake steamers and trolley cars connect it with a number of nearby towns. The first settlement was made in 1810, by a company of people in search of agricultural lands; in 1815 the town was platted, and incorporated as a village in 1827. The natural advantages of the surrounding country attracted numerous settlers, but the place was not incorporated as a city until 1886. Its chief manufactures are furniture, woolen goods, photographic paper, metallic goods, boots and shoes, agricultural implements, and brooms; there are also saw-mills, canning factories, and lumber and brickyards. The James Prendergast Free Library, containing about 17,000 volumes, is located here; and the city has an excellent high school. The late Reuben E. Fenton, United States Senator and Governor of the state, resided here. More than one-third of the population is composed of Swedes, a large proportion of whom use their native language in their homes, and they have their own Swedish papers and literature. The city officials consist of a mayor, who holds office for two years, a city council, clerk, overseer of the poor, sealer of weights and measures, constables, assessors, justices of the peace, and police justices, all of whom are elected by the people. Subordinate officials are appointed by the mayor with the approval of the council. Pop. (1910) 31,297.

JAMESTOWN, *jāmz′town:* city, cap. of Stutsman co., N. Dak.; on the James river and the Northern Pacific railroad; 90 m. w. of Fargo. It has a strikingly picturesque location in the fertile valley of the James and on the e. side of the river, where the bluffs are from ½ to 1 m. from the bank; has partaken of the phenomenal growth of the entire state, having been settled largely by persons of means from the e. states. It contains graded schools, several churches, banks, costly stone court-house, state insane hospital, hotel, roller-mills, and grain elevators, and several manufactories. In 1889, Aug., the city was an unsuccessful candidate for the capital of the new state of N. Dak., but the constitutional

convention in providing and locating public institutions gave it an additional institution—the state asylum for the feeble-minded—and directed the legislature to appropriate 20,000 acres of congressional-grant lands for its support. Pop. about 4,000.

JAMES'TOWN: island in James river, Va., 32 m. above its mouth, forming with Williamsburg city a district of James City co., about 45 m. n.w. of Norfolk. It was the site of the first English settlement in the United States, a band of 107 colonists under command of Christopher Newport having sailed up the James river (which they named after their reigning sovereign) from the Chesapeake, 1607, Apr. 26. They began a town on a peninsula projecting from the n. bank of the river May 13. The first colony was saved from discouragement and dispersion by the activity of Capt. John Smith (q.v.) and the friendly offices of the Indian maiden Pocahontas (q.v.). A second company settled there 1608, a third and larger one 1609; Lord Delaware, the charter gov., arrived 1610. Sir Thomas Dale brought 300 more settlers and some cattle the same year, and Sir Thomas Gates a fifth band 1611. Jamestown became the capital of the colony, and the first legislative assembly ever convened in British America met here 1619, June 29. Williamsburg was settled 1632, and the seat of govt. was soon afterward removed thither from Jamestown which then began to decline. It was burned by Nathaniel Bacon in the 'Bacon' rebellion 1676, and has never been rebuilt. In 1781 it was the scene of an engagement between the troops of Gen. Wayne and Lord Cornwallis. The 300th anniversary of the settlement of the town was celebrated in 1907, with a splendid exposition, to which the state of Virginia, as well as the national government, contributed liberally. The foundations of the ancient buildings were unearthed, and the buildings themselves reproduced; and one feature of the exposition was a representation of the daily lives of the early colonists.

JAMIESON, or JAMESON, *jā'mĭ-son*, JOHN, D.D.: 1759, Mar. 3—1838, July 12; b. Glasgow: Scotch scholar. He studied for the ministry, and 1781 was ordained pastor of a congregation at Forfar, in connection with the Anti-burgher Secession body. In 1797, he was transferred to Edinburgh, where he died. Jamieson's reputation as a man of letters rests on his *Etymological Dictionary of the Scottish Language* (1808–9; supplement 1825. Various new editions have appeared, a good one in 1880–82). It is a work of great industry, and considerable value as a collection of Scotch words, phrases, customs, etc.; but it has little critical or philological merit, according to the present standard. His preliminary dissertation on the 'Origin of the Scots' Language' is an elaborate but unsuccessful attempt to prove that the Scottish Language is really the Pictish language; and that the Picts were not Celts, but Scandinavian Goths.

JAMS AND JEL'LIES: conserves of various juicy fruits prepared by boiling with sugar. Jams are thick opaque preparations sometimes containing the whole fruit, and at others the fruit more or less bruised or broken: jellies are transparent preparations of juices alone. While a large proportion of housewives make a business of putting up quantities of jams and jellies for domestic consumption, the demand for them is so great that in recent years manufactories of very large dimensions have been established in the United States and England for preserving fruits in various ways. The principal fruits used for jam-making are plums, apricots, cherries, currants, gooseberries, strawberries, raspberries, mulberries, cranberries, oranges, quinces, rhubarb, apples, and pears. The natural gelatinizing property of fruit is a gummy constituent called *pectin*, a non-nitrogenous body found only in very ripe fruit. Growing and partially ripened fruit contain an allied property called *pectose*, which is readily transformed into *pectin* by the action of heat, and such a transformation takes place in the boiling of the juices of acid unripe fruits. The less fruits are squeezed the more transparent will be the resulting jelly; and in most cases it is necessary to apply heat or boiling to hard fruits to force the juice to flow freely. Every housewife has her own rule about the quantity of sugar necessary for successful preserving, as well as the method of sealing the receptacle. Manufactured jams and jellies are put up in wooden pails the same as 'black butter,' in earthenware jars and pots, in wide-mouth glass bottles, and in small glass tumblers. There are several patented forms of glass jars for general preserving, the peculiarities being in the form of stopper and method of holding it in place. These jars are generally set in pans of hot water, and the preserves poured in hot and allowed to overflow slightly. Then the stoppers are applied and screwed or otherwise tightened sufficiently to prevent the contents running out when the jar is inverted; the jar is set aside to cool, and the stopper is then fully tightened.

JANAPA, n. *jăn'ă-pă:* the hemp of India which furnishes a valuable fodder; gunny-cloth and cordage also are made of it.

JANAUSCHEK, *yâ'now-shĕk*, Francesca Romana Magdalena: actress: b. Prague, Bohemia, 1830, July 20; d. Amityville, L. I., 1904, Nov. 28. She developed an extraordinary musical talent in early childhood, was a phenomenal pianist and vocalist when 10 years old, entered the Prague Conservatory to prepare for the operatic stage when 15 years old, learned the Italian language, abandoned opera for the drama, made her first appearance on the stage as Caroline in the comedy, *I Will Remain Single*, at Prague when 16 years old, and after two years of hard study became leading lady at the Stadt Theatre at Frankfort. She remained there 11

years, and then became a 'star.' She gave her first performance in the United States, in the New York Acad. of Music, 1867, Oct. 9, as Medea, and afterward played to large audiences in other cities. Returning to Germany she studied the English language, and on her second tour of the United States 1873–4, played Medea, Lady Macbeth, Marie Stuart, and other parts of a strictly tragic order in English. In 1876 she played in English in London and the chief cities of the kingdom, and was hailed as the successor of Rachel; 1884, Oct. 2, she gave a special matinee performance in the Fourteenth-street Theatre, New York, before a crowded audience of the most distinguished actors and actresses then in the city, at their request, and appeared as Mico, Leben, and Cerce Encore in her new play *My Life*. She was very successful in such roles as Meg Merrilies, Mary, Queen of Scots, and in double roles, as in *Bleak House* and other plays. She retired from the stage in 1898.

JANE, Fred. T., English naval author: b. 1865, Aug. 6. He was educated at Exeter school, invented the naval war game, was naval correspondent of the *Engineer*, the *Scientific American*, and the *Daily Chroniele*, and has written: *Blake of the 'Rattlesnake'* (1895); *The Ineubated Girl* (1896); *To Venus in Five Seconds* (1897); *The Lordship, the Passen, and We* (1897); *The Violet Flame* (1897); *The Port Guard Ship* (1897); *All the World's Fighting Ships* (naval annual); *The Torpedo in Peaee and War* (1898); *The Jane Naval War Game* (1898); *The Imperial Russian Navy* (1900); *Ever Mohun* (1901); *Hints on Playing the Jane Naval War Game* (1902); *The Jane Coast Operations War Game for the Instruction of Garrison Artillery in Coast Defense* (1903); *The Imperial Japanese Navy* (1904); etc.

JANES, Edmund Storer, American Methodist Epiccopal bishop: b. Sheffield, Berkshire County, Mass., 1807, April 27; d. New York, 1876, Sept. 18. In 1830 he entered the Methodist ministry in the Philadelphia conference, in 1835 became financial agent for Dickinson College, in 1840–4 was financial secretary of the American Bible Society, and in 1844 was elected bishop. In connection with his episcopal duties he traveled widely in the United States and abroad, and subsequent to the Civil War aided in the reorganization of his Church. He had some reputation as a preacher.

JANES, Lewis George, American scholar and author: b. Providence, R. I., 1844, Feb. 19; d. Greenacre, Maine, 1901, Sept. 5. He was president of the Brooklyn (N. Y.) Ethical Association in 1885–96, lecturer on sociology and civics in the School of Political Science there in 1893–6, and in 1896 became director of the Cambridge (Mass.) conferences and the Monsalvat school of comparative religion. In 1899 he was elected president

of the Free Religious Association of America. Among his works are: *A Study of Primitive Christianity* (1887); *The Evolution of Morals* (1889); *Life as a Fine Art* (1891); *War and Progress* (1893); *Cosmic Evolution as Related to Ethics* (1895); *Social Ideas and Social Progress* (1899); and *Health and a Day* (1901).

JANESVILLE, *jānz'vĭl*, Wis., city, county-seat of Rock County; on the Rock River and on the Chicago, M. & St. P. and the Chicago, N. W. R.R.'s; about 85 miles northwest of Chicago and 60 miles southwest of Milwaukee. The first permanent settlement as a village was in 1837, and it was chartered in 1853. Janesville is located in an agricultural region, noted for the amount and quality of tobacco raised. The chief manufactures are agricultural implements, foundry products, wagons and carriages, furniture, cotton and woolen goods, boots and shoes, flour, fountain pens, and school supplies. It has large lumber and brick yards, storage houses, and stock yards. Its principal trade is in its own manufactured goods, farm and dairy products. Some of its principal buildings are the State School for the Blind, the Saint Joseph's Convent, the Y. M. C. A. buildings, two hospitals, the churches, high school, public library, court house, and city hall. The mayor holds office for two years. The mayor, council, board of education, attorney, city clerk, treasurer, sealer of weights and measures, and justices of the peace are chosen by popular election. The mayor appoints, subject to confirmation by the council, the directors of the public library; the council elects the city engineer, the assessors, and the street commissioners. The members of the fire and the police departments are selected from the eligible civil service lists. Since 1885 there has been a constant and healthy expansion in industrial and commercial lines. Pop. (1910) 13,894.

JANET, *zhâ-nā'*, Paul, French philosopher: b. Paris 1823, April 30; d. 1899, Oct. 4. He was educated at the Lycée Louis-le-Grand and the École Normale. He was professor of moral philosophy in the college at Bourges 1845–48, and in the University of Strassburg 1848–57; was professor of logic in the Lycée Louis-le-Grand at Paris 1857–64; and from 1864–97 was professor of the history of philosophy at the Sorbonne. In 1864 he was elected a member of the Academy of Moral Sciences; in 1860 was decorated with the cross of the Legion of Honor; and in 1877 was promoted officer. His chief works are: *La Famille: Leçons de philosophie morale* (1855), awarded a Sorbonne prize; *Histoire de la Philosophie morale et politiques dans l'Antiquité et dans le Temps modernes* (2 vols. 1858), also crowned by the Academy; *La Philosophie du bonheur* (1862, 1873); *Etudes sur la dialectique dans Platon et Hegel* (1860); *Le matérialisme contemporain en Allemagne* (1864); *Histoire de la Science politique* (1871); *Prob-*

*lèmes du XIX Siècle* (1872); *Philosophie de la Révolution française* (1875); *Les Causes finales* (1877); *Saint-Simon et le Saint-Simonisme* (1878); *Les Philosophie française contemporaine* (1879); *Les Maîtres de la pensée moderne* (1883); *Les origines du socialisme contemporain* (1883); *Victor Cousin et son œuvre* (1885); *La philosophie de Lamenais* (1890); *Fénelon* (1892); *Principes de métaphysique et de psyehologie* (1896); etc. He also published several text-books, contributed numerous articles on the liberty of thought to many of the leading periodicals and translated Spinoza's *God, Man, and Happiness,* and Leibnitz's *New Essays on Human Understanding.*

JANG, Sir SALAR (native name, Mir Torab Ali): 1829–83: prime minister to the Nizam of Hyderabad (see NIZAM'S DOMINIONS); of a princely family. At an early age he obtained admission into the civil service of Hyderabad, and 1853 he became prime minister, succeeding his uncle, and rendering wise and faithful service for 30 years. He began at once to reorganize the different departments of the state, then in a deplorable condition, and to rectify old abuses. The Nizam had long neglected to fulfil his treaty obligations to England, and the state was taken temporarily under British authority to secure the payment of military debt. The roads were swarming with robbers, and each castle was a nest of brigands. Probably, only the good results attending the policy adopted by Sir Salar Jang, prevented abolition of native rule. Further reforms were made in the army, courts of justice were established at Hyderabad, and the police force organized. The construction and repairs of works of irrigation were attended to, and schools were gradually established. During the mutiny 1857, Sir Salar Jang remained faithful to British interests at the risk of his life. Under the Nizam, who died in 1869, he was much hampered in his procedure; under his successor he shared with another noble the post of regent. Besides native titles, Sir Salar Jang was D. C. L. of Oxford, and a knight grand commander of the Star of India.

JANG BAHADUR, Sir: prime minister to the Maharajah of Nepaul: b. before 1817; d. 1877, Feb. 25: sometimes termed the Bismarck of N. India. His uncle held a high position in the administration of affairs, but was murdered at the instigation of the queen; and a new ministry being formed Jang Bahadur received the command of the army. When in 1846 the new premier was assassinated Jang Bahadur fell upon an assembly of chiefs and nobles convened at the palace, and a general massacre took place, fourteen of the chiefs dying by his hand. Next day he was made prime minister; a conspiracy against him was quickly quenched in blood. The queen was afterward banished, and the heir-apparent was raised to the throne,

In the mutiny of 1857 the minister sent a body of Gûrka troops for reinforcement of the British army. When the mutiny was subdued, the Maharajah of Nepaul obtained a large extension of territory, and Jang Bahadur received from Queen Victoria a grand cross of the Star of India. He was succeeded by his brother.

JANGLE, n. *jăng'gl* [OF. *jangler*, to prattle: Dut. *jangelen*, to yelp]: discordant sound; babble: V. to cause to sound discordantly, as in bell-ringing; to quarrel in words; to wrangle. JAN'GLING, imp.: ADJ. babbling; producing discordant sounds, as bells: N. sound of babbling; mere prating; altercation; dispute. JANGLED, pp. *jăng'gld*. JAN'GLER, n. *-glĕr*, one who jangles; a chattering noisy fellow.—SYN. of 'jangle, v.': to altercate; bicker; wrangle; rattle; jar; prate.

JANIN, JULES GABRIEL, French critic: b. Saint Étienne, department of the Loire, 1804, Dec. 24; d. Paris, 1874, June 20. He was educated at Saint Étienne and at the Collége Louis-le-Grand; studied law and became a private tutor in the Latin quarter of Paris; and then turned to literature, becoming editor, novelist, journalist, and critic. He soon became a contributor to several papers, notably the liberal opposition paper *Le Figaro*, and the government paper *Quotidienne*, and in 1836 became connected as dramatic critic with the *Journal des Débats*, in the columns of which for nearly 40 years he made or destroyed reputations, styling himself 'le Prince de la Critique.' He possessed a wonderful piquancy of style and an airy grace of sentiment and wit, but as a critic, however, he was utterly inconsistent through lack of any general principles of judgment and said the first thing that entered his mind, though fortunately his lack of judgment was linked with amiability. He was an indefatigable worker and was in constant demand by the publishers of Paris to review books, write prefaces and do other literary work. Of his published works, one or two of which are remarkable both in substance and style, the following are noteworthy: *L'âne Mort et la Femme Guillotinée* (1829), which went through several editions; *La Confession* (1830); *Barnave* (1831); *Contes fantastiques et contes littéraires* (1832, new ed. 4 vols. 1863); *Contes nouveaux* (1833); *Le chemin de traverse* (1836); *Un cœur pour deux Amours* (1837); *Histoire de France* for the plates of *La galerie historique de Versailles* (1837–43); *Voyage en Italie* (1839); *Les Catacombes* (1829); *Le voyage d'un homme heureux* (1840); *La Normandie Historique* (1843); *La Bretagne historique* (1844); *La Religieuse de Toulouse* (1850); *Les Gaietéd champêtres* (1851); *Les petits bonheurs* (1856); *Les symphonies de l'hiver* (1857) with drawings by Gavarni; *Histoire de la littérature drammatique en France* (6 vols. 1858), a selection of his weekly

*feuilletons*, altered and remodelled so as to present a sketch of the history of the French stage and dramatic artists during nearly a quarter of a century; *Rachel, et la tragédie* a biographical and critical work upon that great tragic artist, with photographic illustrations (1859); *La poésie et l'éloquence au temps des Cesars* (2d ed. 1864); *Beranger et son temps* (1865); *Les oiseaux bleus* (1864); *Circe* (1867); *L'Interne* (1689); *Lamartine* (1869); *Fin d'un Monde et du Neveu de Rameux;* and a translation of *Horace* into French (6th ed. 1885). His *Œuvres choises de Jules Janin* (12 vols. 1875–78) and *Correspondence* (1877) appeared after his death. He became a member of the French Academy in 1870.

JANINA, or JANNINA, *yân'nē-nâ*, or JOANNINA (frequently written as pronounced, YANINA): city of Turkey, cap. of a vilayet. It was not ceded to Greece in 1881, though it was in the part of Epirus recommended for cession by the Berlin congress of 1878. It is on a lake of the same name, 40 m. inland from the shore opposite the island of Corfu. The extreme length of the lake is about 12 m., greatest breadth about 3 m. At its s. end stood the ancient city Dodona. The city of Janina stands in an extensive and fertile plain, which produces fruits and grain in abundance. Its chief buildings are 19 mosques, 6 Greek churches, a Greek college, and two synagogues. Gold brocade is extensively manufactured by Greek workmen, as well as gold lace for the east, morocco, leather, silk goods, and colored linen. Janina was long the headquarters of the able but unscrupulous Ali Pasha (q.v.). It is now in part deserted. Pop. about 20,000.

JANITOR, n. *jăn'ĭ-tẽr*, [L. *janĭtor*, a doorkeeper—from *janŭă*, a gate]: a doorkeeper; a porter.

JANITSCHEK, HUBERT, Austrian historical art writer: b. Troppau, Silesia, 1846, Oct. 30; d. Leipzig, 1893, June 21. He was educated at the university at Gratz 1868–73, from the latter year until 1877 pursued the study of art history in Italy, from 1877–79 was custodian of the Austrian Museum of Art and Industry in Vienna, and was subsequently professor in the universities of Prague (1879), Strassburg (1881), and Leipzig (1891). He was the author of the following biographies in Dohme's *Kunst und Kunstler:* Andrea del Sarto, Bellini, Paolo Veronese, Tintoretto, etc.; and also wrote *Die Gesellschaft der Renaissance in Italien und die Kunst* (Stuttgart 1879); *Zwei Studien zur Geschichte der karolingischen Malerei* (1885); *Geschichte der deutschen Malerei* in Grote's *Geschichte der deutschen Kunst* (Berlin 1890); *Dante's Kunstlohre und Giottos Kunst* (Leipzig 1892); etc. His wife, MARIE (b. Vienna 1859, July 23) became known as a poet and novelist, her principal works being *Legenden und Geschichten* (Stuttgart 1885); *Im Kampf um die*

*Zukunft*, an epic poem (1887); *Gesammelte Gedichte* (2 vols. 1892); *Aus Alten Zeiten* (1900); the novels *Aus der Schmeide des Lebens* (1890); *Lichthungrige Leute* (1891); *Atlas* (Berlin 1893); *Gott hat es gewollt* (1895); *Frauenkraft* (1900); *Harter Sieg* (1901); etc.

JANIZARY, n. *jăn'ĭ-zĕr-ĭ*, or JANISSARY, n. *jăn'ĭs-sĕr-ĭ* [Turk. *yeni ischeri*, new troops: F. *janissaire;* comp. Pers. *askari*, a soldier]: member of the once formidable infantry of the Turkish empire.—The *Janizaries* were a Turkish military force, originally formed by the Osmanli sultan Orkhan, about 1330, of young Christian prisoners compelled to embrace Mohammedanism; more perfectly organized by Sultan Amurath I., after 1362, when the number was raised to about 10,000, and especial privileges were conferred on them. They were for some time recruited from Christian prisoners; but their privileges soon induced many young Turks to seek admission into their body. There were two classes of Janizaries, one regularly organized, dwelling in barracks in Constantinople and a few other towns, and whose number at one time amounted to 60,000, but was afterward reduced to 25,000; and the other composed of irregular troops, called *Jamaks*, scattered through all the towns of the empire, and numbering 300,000 to 400,000. At the head of the whole Janizary force was the *Aga* of the Janizaries, whose power was limited only by the danger of revolt, and extended to life and death. The Janizaries were always ready to break into deeds of violence if their pay or perquisites were withheld. In times of peace they acted as a police force. They served on foot; generally formed the reserve of the Turkish army, and were noted for wild impetuosity of attack. The sultan's body-guard was formed of them. The Janizaries, however, soon began to be very unruly; and their history abounds in conspiracies, assassinations of sultans, viziers, agas, etc., and atrocities of every kind; so that, by degrees, they became more dangerous to the sultans than any foreign enemies. The attempts of the sultans to reform or dissolve them were always unsuccessful, till Sultan Mahmoud II., 1826, being opposed in some of his measures by the Janizaries in Constantinople, displayed the flag of the Prophet, and succeeded in arousing on his own behalf the fanatical zeal of other portions of his troops. The Janizaries deserted by their aga, and other principal officers who remained faithful to the sultan, were defeated, and their barracks burned, when 8,000 of them perished in the flames. A proclamation 1826, June 17, declared the Janizary force for ever dissolved. All opposition was defeated with bloodshed. Not fewer than 15,000 were put to death, and more than 20,000 banished.

JANKO (*yŏn'kō*) KEYBOARD: a keyboard for the

pianoforte invented 1882 by Paul von Janko; introduced in London 1888, in New York in 1890. It consists of six rows or banks of keys arranged like a fan, placed in a semi-circle. Each note has three different keys. The keyboard can be attached to any pianoforte, grand, upright or square.

JAN MAYEN'S LAND, *yân mī'ėnz:* island in the Arctic Ocean, named after a Dutch navigator by whom it was discovered 1611. It lies between Iceland and Spitzbergen, and is the northernmost known volcanic land. Its highest point is the volcano, Beerenberg, 6,640 ft., a conical, snow-covered mountain, from which flames and smoke have been seen to proceed, and the sides of which exhibit immense glaciers and frozen waterfalls. Another volcano called Esk, about 1,500 ft. high, was discovered by Scoresby 1817. An interesting account of the island is in Lord Dufferin's *Letters from High Latitudes.*

JANNARIS, Anthony, Greek educator: b. Lakkoi, a mountainous village in Kydonia southwest of Canea, of the island of Crete, 1852, Aug. 25. He was educated at Canea, Athens, and Marburg; was foreign secretary to the Cretan government 1882–84; headmaster of the public gymnasium there 1883–85; head clerk to the British Consulate in Crete 1884–88; and lecturer on Greek literature at Athens University in 1889. He took a prominent part in the Cretan insurrection of 1889–90 and was proscribed by the Sultan; and subsequently went to England where for six years he studied in the British Museum investigating the history of the Greek language. Upon his return to Crete he was elected a member of the assembly and during the troubles of 1897 acted as correspondent for the *Times.* From 1896 to 1904 he was lecturer on post-classical and modern Greek at Saint Andrews University. His publications include *Kreta's Volkslieder* (1876); *Neugriechische Grammatik* (1878); *Adnotationos Critical in Longini Peri Hypsous libellum* (1880); *Deutsch-Neugriechisches Handwörterbuch* (1884); *Methodos tês Germanikês Glosses* (1887); *Methodos tês Gallikês Glosses* (1888); *Germano-Hellenikòn Lexikón* (1888); *Hellenikòn Lexikón* (1890–92); *Peri Erotokritou* (1889); *Echo der Neugriechischen Sprache* (1890); *Modern Greek Dictionary* (1895); *Historical Greek Grammar* (1897); *Saint John's Gospel, as read by the early Christians;* etc.

JANNEY, *jăn'nĭ,* Samuel MacPherson: 1801, Jan. 11–1880, Apr. 30; b. Loudon co., Va.: author. He was a preacher in the Hicksite branch of the Soc. of Friends, travelled extensively, was appointed by Pres. Grant an Indian supt. 1869, and published: *The Country School-House,* poem (1825); *Conversations on Religious Subjects* (1835–43); *The Last of the Lenape, and Other Poems* (1839); *The Teacher's Gift,* essays (1840);

*An Historical Sketch of the Christian Church during the Middle Ages* (1847); *Life of William Penn* (1852–56); *Life of George Fox* (1853); and *History of the Religious Society of Friends, from its Rise to the Year* 1828, 4 vols. (1860–67.)

JANOW, *yâ'now*, MATTHIAS VON: b. probably in Prague, d. there 1394, Nov. 30: reformer. He was descended from a noble Bohemian family, studied theology in the universities of Prague and Paris, visited Rome and was appointed canon of the Cathedral of St. Vitus in Prague and confessor to Charles II. 1381, and was considered the Wycliffe of the Bohemian Church. Though without special oratorical distinction as a preacher, he was a man of great spiritual power, and his writings had remarkable influence on the religious thought of his time. He fearlessly assailed the evils and corruptions of the church, arraigned the conduct of bishops and priests, urged the abolition of all human additions, doctrinal and ceremonial, to Christianity, and pleaded for an immediate return to the simple foundation on which the Apostolic Church rested. His various writings were collected under the title of *De Regulæ Veteris et Novi Testamenti* 1392. The pope on being informed of the character of the principles that he was propagating, declared him guilty of teaching heresies, and 16 years after his death ordered all his writings to be burned with those of Wycliffe.

JANS, *jăns*, or *yâns* (or JANSEN, *jăn'sĕn* or *yân'sĕn*), ANNEKE, *ân'nĕ-kĕh*, or ANNETJE, *ân'nĕt-yĕh:* about 1600–1663, Mar. 19; b. Holland: owner of the King's Farm estate in New York. She came to America with her husband, Roelof Jansen, who was sent out by Patroon Van Rensselaer as asst. steward of his colony at Beaverwyck (now Albany), N. Y., 1630, and the family were subsequently among the earliest Dutch settlers in New Amsterdam (now New York). In 1636 she and her husband obtained from Gov. Van Twiller a grant of 62 acres of land on the w. side of Broadway extending to the North river and from the present Christopher St. to Fulton St. Soon afterward her husband died, and 1638 she married Everardus Bogardus (q.v.), minister of the Dutch Church in New Amsterdam. In 1654, being again a widow, she obtained from Gov. Stuyvesant a patent for this land in her own name, and removed to Beaverwyck, where she died. After her death the grant of land was confirmed to her by the English govt. In 1671 some of her heirs conveyed the whole farm to Gov. Lovelace, and 1705 it was granted by the colonial authorities under Queen Anne to the corporation of Trinity Church, which has since held it. The heirs of the heir who refused to join in the conveyance to Gov. Lovelace brought the first of numerous suits in ejectment 1750, resting a claim on the denial of title in Queen Anne. Other suits were brought 1760, 1807, 30,

34, and 47, all of which were dismissed, and a later and more determined effort for recovery was made 1866–7. Against the oft-repeated charge of the heirs that the church corporation had bought off the leaders in the various suits in ejectment, the court of chancery (Vice-Chancellor Sanford, 1847 has decided that, waiving all other points, the church had acquired a valid title by undisputed possession longer than the time of limitation.

JANSEN, *jăn'sĕn*, D. *yân'sĕn* (or JANSENIUS), CORNELIUS Bishop of Ypres, author of the celebrated *Augustinus:* 1585, Oct. 28—1638, May 6; b. Akkoi, near Leerdam, Holland; of humble Rom. Cath. parentage; nephew of the well-known biblical commentator, and Bishop of Ghent, of the same name. The earlier studies of Jansen were divided between Utrecht, Louvain, and Paris. Having obtained a professorship at Bayonne, he applied himself with all his energy to scriptural and patristic studies, especially of the works of St. Augustine. From Bayonne, he returned to Louvain, where, 1617, he obtained the degree doctor, was appointed lecturer on Scripture, and was prominent in the affairs of the university, especially in a contest with the Jesuits, on occasion of which he was sent on a mission to the court of Madrid. In 1630, he was appointed to the professorship of Scripture; and having distinguished himself by a pamphlet on the war with France, *Mars Gallicus*, he was promoted, 1636, to the see of Ypres. In this city he died of the plague, just as he had completed his great work, the *Augustinus*, which proved the occasion of a theological controversy, the most important, in its doctrinal, social, and even political results, which has arisen since the Reformation. Its main object, in which it coincided with the scheme of doctrine already condemned in Bajus (q.v.), was to prove, by an elaborate analysis of St. Augustine's works, that the teaching of this Father against the Pelagians and semi-Pelagians (q.v.), on Grace, Free-Will and Predestination, was directly opposed to the teaching of the modern, and especially of the Jesuit schools (see MOLINA), which latter teaching he held to be identical with that of the semi-Pelagians. In the preface, he submitted the work to the judgment of the Holy See. On its publication 1640, being received with loud clamor, especially by the Jesuits, and at once referred to Rome for judgment, the *Augustinus* —together with the antagonist publications of the Jesuits—was prohibited by a decree of the Inquisition, 1641; in the following year, it was condemned as heretical by Urban VIII. in the bull *In Eminenti.* This bull encountered much opposition in Belgium; and in France, the *Augustinus* found many partisans, who were animated by a double feeling, as well of doctrinal predilection as of antipathy to the alleged laxity of moral teaching in the schools of the Jesuits, with whom the

opposition to the *Augustinus* was identified. (See JESUITS). The most eminent of the patrons of the *Augustinus* were the celebrated association of scholars and divines who formed the community of PORT ROYAL (q.v.), Arnauld, Nicole, Pascal, etc. Nevertheless the syndic of the Sorbonne extracted from the *Augustinus* seven propositions (subsequently reduced to five) which were condemned as heretical by Innocent X. 1653. Hence arose the celebrated distinction of 'right' and of 'fact.' The friends of the *Augustinus*, while they admitted that in point of *right* the five propositions were justly condemned as heretical, yet denied that in point of *fact* these propositions were to be found in the *Augustinus*, at least in the sense imputed to them by the bull. A further condemnation was therefore issued by Alexander VII. 1656, which was rigidly enforced in France, and generally accepted; and 1668, peace was partially restored by Clement IX., at least all overt opposition was repressed by the iron rule of Louis XIV. The more rigid Jansenists, however, and at their head Antoine Arnauld, emigrated from France, and formed a kind of community in the Low Countries. On the death of Arnauld, 1684, the controversy remained in abeyance for some years; but it was revived with new acrimony by the well-known dispute on the so-called 'case of conscience,' and still more angrily in the person of the celebrated Quesnel (q.v.), whose *Moral Reflections on the New Testament*, though published with high ecclesiastical authority, at various intervals from 1671 till his death, 1710, was denounced to the pope, Clement XI., as a text-book of undisguised Jansenism. This pope issued, 1713, in the constitution 'Unigenitus,' a condemnation in mass of 101 propositions extracted from the *Moral Reflections;* which, however, met with great resistance in France. The death of Louis XIV. caused relaxation of the repressive measures. The regent, Duke of Orleans, was urged to refer the whole controversy to a national council, and the leaders of the Jansenist party appealed to a general council. The party thus formed, which numbered four bishops and many inferior ecclesiastics, were called, from this circumstance, the Appellants. The firmness of the pope, and a change in the policy of the regent, brought them into disfavour. An edict was published, 1720, June 4, receiving the bull; and even the parliament of Paris submitted to register it, though with a reservation in favor of the liberties of the Gallican Church. The Appellants mostly submitted, the recusants being visited with severe penalties; and on the accession of the new king, Louis XV., the unconditional acceptance of the bull was at length formally accomplished, the parliament being compelled to register it in a *lit de justice*. From this time forward the Appellants were rigorously repressed and a large number immigrated to the Netherlands, where they

formed a community, with Utrecht as a centre. The party still remaining in France persisted in their inveterate opposition to the bull, and many of them fell into great excesses of fanaticism. See CONVULSIONARIES.

In one locality alone, Utrecht and its dependent churches, can the sect be said to have had a regular and permanent organization, which dates partly from the forced emigration of the French Jansenists under Louis XIV., partly from the controversy about Quesnel. The vicar-apostolic, Peter Coddle, having been suspended by Clement XI., 1702, the chapter of Utrecht refused to acknowledge the new vicar named in his place, and angrily joined themselves to the Appellant party in France, many of whom found a refuge in Utrecht. At length 1723, they elected an abp., Cornelius Steenhoven, for whom the form of episcopal consecration was obtained from the French bp. Vorlet (titular of Babylon), who had been suspended for Jansenist opinions. A later Jansenist abp. of Utrecht, Meindarts, established Haarlem and Deventer as his suffragan sees; and in 1763, a synod was held, which sent its acts to Rome, in recognition of the primacy (though not the infallibility) of that see, which the church of Utrecht professes to acknowledge. Since that time, the formal succession has been maintained, each bishop, on being appointed, notifying his election to the pope, and craving confirmation. The popes, however, have uniformly rejected all advances, except on the condition of the acceptance of the bull Unigenitus, and the recent act of the Holy See, in defining as of Rom. Cath. faith the dogma of the Immaculate Conception of the Blessed Virgin Mary, has been the occasion of a new protest. The Jansenists of the Utrecht Church still number about 6,000, and are divided over 25 parishes in the dioceses of Utrecht and Haarlem. Their clergy are about 30 in number, with a seminary at Amersfoort. The Jansenists abp. of Utrecht has recently consecrated a bishop for the Old Catholic community in Germany: see DÖLLINGER: OLD CATHOLICS.

JANSEN, OLAÜS, Swedish naturalist: b. Christianstadt, 1714; d. Copenhagen, Denmark, 1778. He was educated in Germany; was professor in the University of Tübingen for several years; was then appointed to a professorship in the University of Copenhagen, of which he was rector in 1761; and was elected a member of the Academy of Sciences in 1762. In 1764 he was sent by the Danish government to study the natural resources of the South American countries but during his travels he reached as far north as Central America, Louisiana, and Florida. In 1772 he visited Boston. His chief publications are *Den Ceist in den Naturvidenskaben og naturens almindelige laere* (Copenhagen 1773); *Neue Reisen dureh Brazil und Peru* (1775); *Neue Raisen durch Louisiana und Nouva España* (1776); *Anmarkningar ons*

*Historia Naturalis och climated af Nyc England og Nyc Spanien* (2 vols. Copenhagen and Stockholm 1778); etc.

JANSENISM, n. *jăn'sĕn-ĭzm* [from *Jansen*, or *Jansenĭŭs*, Bishop of Ypres]: doctrines taught by Jansen regarding free-will and grace. JAN'SENIST, n. *-ĭst*, a follower of. See JANSEN, CORNELIUS.

JANSEN, KRISTOFER NAGEL, Norwegian novelist and educator: b. Bergen, 1841, May 5. He was educated for the ministry at the University of Christiania, later interested himself in the movement for popular education and established a 'Popular High School,' first in Sel, a district of Gudbrandsdalen, Norway, and afterward in Gausdal. Subsequently he travelled in Italy, in 1879 lectured in the United States, and from 1882 until 1892 was pastor of a Unitarian church in Minneapolis,. where he had settled. He also became editor of a Unitarian paper, *Saamanden* ('The Sower'), published in the Norwegian language at Minneapolis. He returned to Norway in 1893. For several years the Norwegian Storthing granted him a poet's pension. Among his published works, of which his earlier novels are written in the so-called *Landsmaal*, are: *Fra Bygdom* (*From the Up-Country Districts* 1866); *Norske Dikt*, poetry (1867); *Jon Arason* (1867), a drama portraying the fate of the last Roman Catholic bishop of Iceland; *Marit Skjölte* (1868); *Han og ho* (*He and She* 1872); *Torgrim* (1872); *Sigmund Brestcson* (1872); *Fraa Dansketidi* (*From the Times of Danish rule* 1875); *Den Bergtekne* (*The Spell-Bound Fiddler* 1876); *Vore Bedsteforældre* (*Our Grandparents*); *Paa begge Sider Havet* (*On Both Sides of the Ocean*); *Prœriens Saga* (*The Tale of the Prairie*, 1885); *Sara* (1891); *Jesus Sangone*, a collection of religious songs (1893); etc.

JANSSEN, JOHANNES, German Roman Catholic historian: b. Xanten, Rhenish Prussia, 1829, April 10; d. Frankfort-on-the-Main, 1891, Dec. 24. He was educated at the universities of Louvain, Bonn (1851–53) and Berlin, was professor of history in the Gymnasium at Frankfort-on-the-Main in 1854, became a priest in 1860, and domestic prelate to the Pope in 1880. He is chiefly known by a work in six volumes, published in 1876 and which subsequently went through 14 editions, entitled *Geschichte des deutschen volkes seit dem Ausgang des Mittelalters* (*History of the German People from the Close of the Middle Ages to the Beginning of the Thirty Years War* 1618). This work attained instant and great popularity among the German people, yet though its learning and thoroughness were not questioned, it was severely attacked by Baumgarten, Ebrard, Schweizer, and others as being partial and unfair. A French translation of the first two volumes was published in Paris in 1887–88. Janssen's other works include: *Wibald von Stahle und Corven* (1854); *Frankreichs Rhein-*

*gelüste und deutschfeindliche Politik in frühern Jahrhunderten* (Frankfort 1861; 2d ed. 1883); *Schiller als Historiker* (Freiburg 1863; 2d ed. 1879); *Zur Genesis der ersten Teilung Polens* (1865); *Gustav Adolph in Deutschland* (1865); *Frankfurts Reichskorrespondenz von* 1376–1519 (1875; 4th ed. 1889); *Friedrich Leopold, Graf zu Stolberg* (1876–77; 2d ed. 1882); *An meine Kritiker* (1882); *Ein zweites Wort an meine Kritiker* (1883); etc.

JANS'SEN, John, American Roman Catholic bishop: b. Keppeln, Rhine Province, 1835, March 3. He pursued theological courses in the seminary of Münster, and in 1858 in the United States, was ordained priest in 1858, was in missionary work at Springfield and Alton, Ill., was vicar-general of Alton diocese in 1870–7 and 1879–86, and in 1888 was consecrated bishop of Belleville, Ill.

JANSSEN, Peter, German historical painter: b. Düsseldorf, 1844, Dec. 12; d. Berlin, 1908, Feb. 19. His father was J. Theodor J. Janssen (1817–94), a noted engraver, and from him he obtained his early education; in his 16th year he entered the Academy at Düsseldorf and became a pupil of Bendemanns and Sohn. In 1877 he was appointed a professor in the Düsseldorf Academy, in 1895 its director, and in 1885 was elected a member of the Berlin Academy. In 1868 he painted his first great work *The Denial of Peter*, in the Academy at Philadelphia. In the same year he obtained first prize in a contest for decorating the walls of the Rathaussaal in Krefeld and completed this work in 1873. In the summer of 1872 he completed the colossal wall painting in the Bremen Exchange, *The Colonization of the Baltic Coast*. In 1874 he decorated the walls of one of the rooms of the National Gallery in Berlin, the painting taken from 12 subjects being entitled *The Myth of Prometheus*. During 1880–82 he decorated the walls of the town hall at Erfurt with six large and three small paintings entitled *Momentous Episodes in the History of Erfurt*. These are noted for their brilliant color scheme and dramatic development. Other paintings by him are *The Infancy of Bacchus* (1883), exhibited at the International Exhibition in Munich; *Walther Dodde and the Peasants of Berg before the Battle of Worringen*, 1288, in the Düsseldorf Gallery, a picture that was awarded a gold medal at Berlin in 1893; *The Battle at Fehrbellin* (1884); *The Battle at Hohenfriedberg; Gebet der Schweitzer vor der Schlacht bei Sempach* (1874); *Nature, Beauty, Human Life*, and *Imagination* in the Aula of the Academy at Düsseldorf; and a portrait of Field-marshal Herwarth von Bittenfeld.

JANSSEN, Pierre Jules César, French astronomer: b. Paris 1824, Feb. 22; d. there 1907, Dec. 23. He was graduated in 1852 as licentiate in the mathematical sciences, and in 1860 as doctor of physical sciences, the

thesis that he wrote upon the latter occasion, *L'absorption de la chaleur rayonnante obscure dans les milieux de l'œil*, creating wide-spread discussion. In 1853 he became temporary professor in the Lycee Charlemagne, and from 1865 to 1871 was professor of general physics in the Special School of Architecture. In 1857 he went to Peru to fix the location of the magnetic equator; from 1861 to 1864 was in Italy observing the solar spectrum; and from the latter year until 1867 was in the Azores with Saint Clare Deville. In 1867 he went to Trani and in 1868 to Cuntoor, India, to observe the total eclipse of the sun, making special spectroscopic observations on the protuberances. In 1870 he escaped in a balloon from Paris, then in a state of siege, in order that he might witness the Algerian obscuration; in 1874 watched the transit of Venus in Japan; in 1875 went as astronomer with the English expedition to Siam; and in the latter year was appointed director of the astrophysical observatory at Meudon, near Paris. In 1883 he was in the Caroline Islands. In 1891 he began his ascensions of Mont Blanc, and in 1892–3 founded an observatory there.

JANSSENS VAN NUYSSEN, Abraham, Flemish painter: b. Antwerp 1575; d. there 1632. In early youth he showed remarkable aptitude for painting and when 18 years of age became the pupil of Jan Snellinck. In 1601 he was admitted as a master into the guild of Saint Luke of which he was dean 1606–7; he then visited Italy. As a colorist he ranks next to Rubens among the Flemish painters of the 17th century; in correctness of drawing he excelled him, in treatment of the nude and in bold composition he equalled him, but in general freedom of disposition and touch and in faculty of color he fell far short. The most important of his paintings, which include biblical, allegorical, and mythological subjects, are *Madonna with Saints* and *Entombment* in the Carmelite church at Antwerp; *Ecce Homo* and *Descent from the Cross* in the Cathedral of Saint Bavon at Ghent; *The Resurrection of Lazarus* in the elector palatinens gallery; *Madonna, Adorations of the Magi*, and *Scaldis* in the Antwerp Museum; *Venus and Adonis* and *Day and Night* in the Vienna Museum; *Old Age Resting on Faith and Hope* in the Brussels Museum; *Meleager and Atalanta* and *Vortumnus and Pomona* in the Berlin Museum; *Diana and Nymphs Watched by Satyrs* in the Cassel Gallery; etc.

JANSSENS, *yâns'sėns* (or Jansens), Victor Honorius: 1664–1739; b. Brussels: painter. He spent 7 years studying painting with Volders, 4 years in the household of the Duke of Holstein, and 11 years in Rome, where he studied the works of Raphael, selected Albano for his model, became acquainted with Tempesta, in whose landscapes he frequently painted figures, and excelled

all his contemporaries in his line. He painted a large collection of figure pieces, gallants and ladies in the costumes of the day, displaying good coloring and rich effects in his dresses and draperies. He remained in Rome 11 years, and on returning to Brussels, painted many large pictures for churches and palaces. In 1718 the emperor invited him to Vienna and made him court painter, but he returned to Brussels, 1722, and restricted himself to altar-pieces till his death.

JANS'SENS, Cornelis (sometimes JOHNSON, Cornelius): Dutch painter: abt. 1590–1665; b. Amsterdam. He went to England 1618, and painted many portraits for the king and the court. In 1648 he retired to Holland. Janssens is distinguished by fine touch, clear color, and careful finish. He painted usually on panel. His style is characterized by a very dark background, throwing into relief the carnations of his portraits.

JANTHINA, *jăn'thĭn-a:* genus of gasteropodous mollusks, of the ord. *Scutibranchiata,* of the same family (*Haliotidæ*) with ear shells. The shell is very similar in form to that of a common snail, but thin and beautifully pellucid. These mollusks are remarkable as inhabitants of the open ocean, in which they swim at the surface of the water by means of a float formed of vesicles containing air, and secreted by the foot. To the undersurface of this float, the egg-capsules are attached. The vesicular float has no more anatomical connection with the animal than the shell has. The Janthinæ abound in the seas of warm climates, and are plentiful in the Mediterranean.

JANTU, n. *jăn'tû:* a machine in India for raising water for the irrigation of the land.

JANUARIUS, *jăn-ū-ā'rĭ-ŭs,* Saint, or San Gennaro: martyr of the Christian faith under Diocletian: b. Benevento, or at least became bishop of that see in the latter part of the 3d c. According to the Neapolitan tradition, he was taken prisoner at Nola; and the place of his martyrdom, 305, was Pozzuoli, where many Christians suffered the same fate. His body is preserved at Naples, in the crypt of the cathedral, and in a chapel of the same church are preserved also the head of the martyr, and two phials (*ampullæ*) supposed to contain his blood. On three festivals each year, the chief of which is the day of the martyrdom, Sep. 19, and on occasions of public danger or calamity, as earthquakes or eruptions, the head and the phials of the blood are carried in solemn procession to the high altar of the cathedral, of the church of St. Clare, where, after a prayer of greater or less duration, the blood, on the phials being brought into contact with the head, is believed to liquefy, and in this condition is presented for the veneration of the people, or for the conviction of the doubter. It occasionally happens that a considerable time elapses before the lique-

faction takes place, and sometimes it altogether fails. The failure is regarded as an omen of the worst import; and on those occasions when the miracle is delayed beyond the ordinary time, great alarm and excitement ensue in the congregation. See many documents in Vol. VI. of the Bollandist *Acta Sanctorum* for September.

JANUA'RIUS, St., Order of: order of knighthood, founded by King Charles of Sicily (afterward Charles III. of Spain), 1738, July 6; abolished after the French invasion of 1806; reintroduced 1814. The badge is a gold octagonal white and red enamelled cross, with gold lilies in the upper and side angles. The obverse represents St. Januarius in episcopal robes, with an open book. The round middle of the reverse shows a golden open book, and two phials partly filled with blood. The knights are either *Cavalieri di Guistizia*, who must count four noble generations, or *Cavalieri di Grazia.*

JANUARY, n. *jăn'ū-ăr-ĭ* [L. *Janŭārĭŭs*, January—from *Jānŭs* an anc. Roman deity, represented with two faces, looking behind and before, with a key in one hand and a staff in the other]: first month of the year. It was, among the Romans, held sacred to Janus (q.v.), and was added to the calendar with February, by Numa. It was not till the 18th c. that January was universally adopted by European nations (1752 in Britain legally) as the *first* month of the year, though the Romans reckoned is as such as early as B.C. 251.—See Calendar.

JANUS, n. *jā'nus:* one of the most anc. Roman deities. Janus with its feminine *Jana*, are—it is supposed—different forms of *Dianus* (probably the Sun) and *Diana* or *Luna* (certainly the Moon). The worship of Janus held a high place in the regards of the Romans. In every undertaking, his name was first invoked, even before that of Jupiter, which is the more singular as Jupiter was unquestionably the greatest of the Roman gods. Perhaps this fact points to the legend that Janus was the oldest of them, and ruled in Italy before any of the others came thither. He presided not only over the beginning of the year, but over the beginning of each month, each day, and the commencement of all enterprises. On New Year's Day people made each other presents of figs, dates, honey-cakes, sweetmeats, etc., wore a holiday dress, saluted each other kindly, etc. The pious Romans played to Janus every morning, whence his name of *Matutinus Pater* ('Father of the Morning'). He is represented with a sceptre in his right hand, and a key in his left, sitting on a beaming throne (probably relic of the original, or at least very old worship of Janus as the sun). He has also two faces (whence the expression applied to a deceitful person, 'Janus-faced'), one youthful, and the other aged, the one looking forward, and the other backward, in which some have professed to see a symbol of the wisdom of the god who beholds

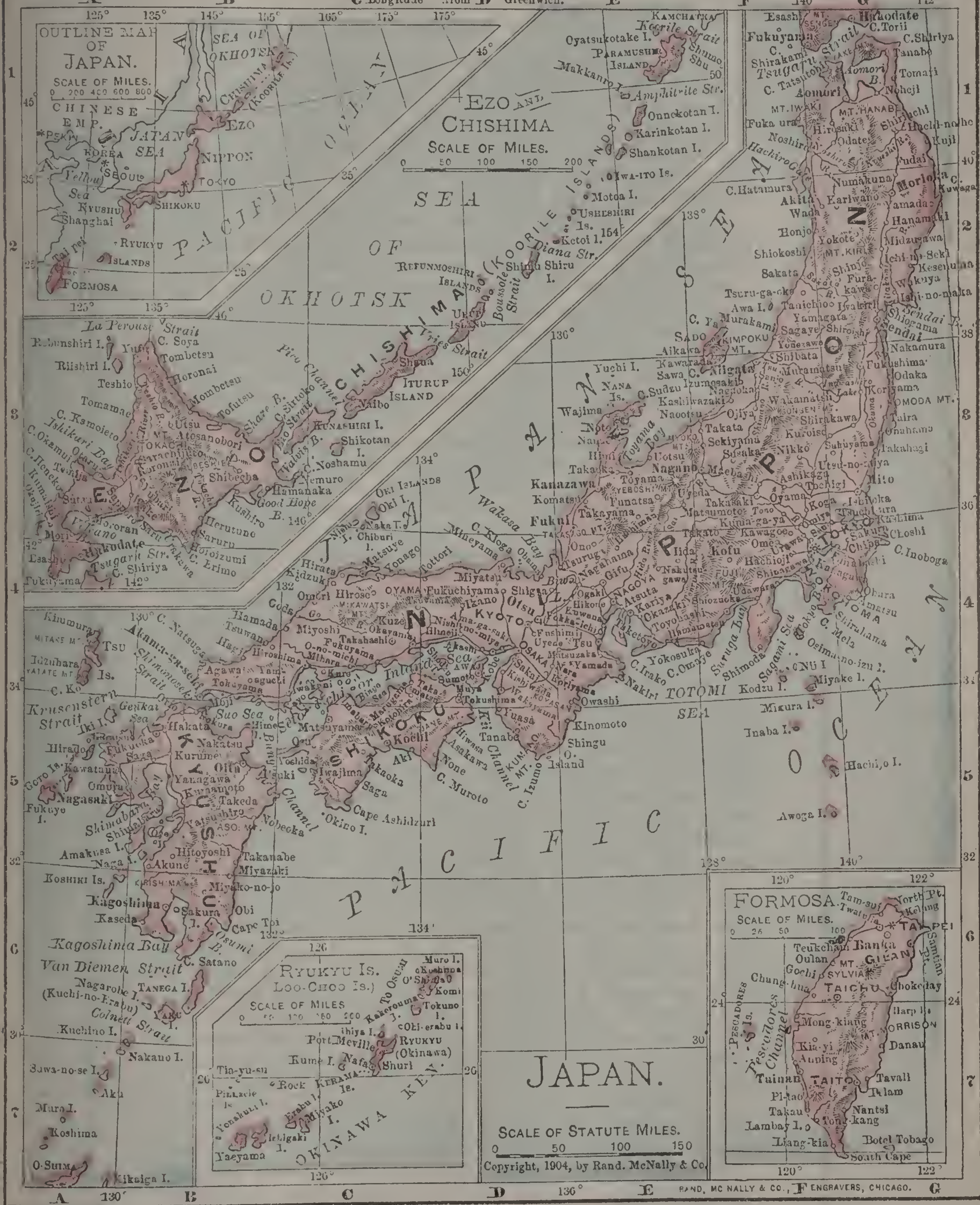
both the past and the future, and others simply of the changing of the year. Numa dedicated to him the covered passage close by the forum, on the road connecting the Quirinal with the Palatine. This passage (erroneously called a temple, but which was merely a sacred gateway, containing a statue of Janus) was open in times of war, and closed in times of peace. It is a striking commentary on the military habits of the Romans, that the place was shut only thrice in 700 years, first by Numa himself, again at the close of the first Punic war, and for the third time, under Augustus. It was closed also by Vespasian A.D. 71. JANUS-CLOTH, n. a fabric having each side dressed, and different colors on the respective sides. JANUS-FACED, double-faced; double-dealing; deceitful.

JANVIER, *jăn'vĭ-ā*, CATHERINE ANN, American painter and author: b. Philadelphia, Pa. She is the wife of T. A. Janvier (q.v.). Her paintings include *Geoffrey Rudel and the Countess of Tripoli; The Princess Badroulbadour; The Guitar Player; Daniel at Prayer; The Violinist;* etc. She has written *Keramics for Students* (1880); *London News* (1904); and has translated (from the Provençal of Félix Gras) *The Reds of the Midi* (1896); *The Terror* (1898); and *The White Terror* (1900).

JANVIER, MARGARET THOMSON, American author, sister of T. A. Janvier: b. New Orleans 1844. Under the pen-name 'MARGARET VANDEGRIFT' she has written many juvenile stories and verses including *Under the Dog-Star* (1881); *Clover Beach; Little Helpers; The Absent-Minded Fairy, and Other Verses* (1883); *The Dead Doll and Other Verses* (1888); *The Queen's Body-Guard; Doris and Theodora; Rose Raymond's Wards; Ways and Means; Holidays at Home; Little Bell and Other Stories; Umbrellas to Mend* (1905); etc.

JANVIER, THOMAS ALLIBONE, American author: b. Philadelphia, Pa., 1849, July 16. He received a common school education; was an editorial writer for the Philadelphia *Press, Bulletin,* and *Times* in 1870–81; lived in New York during most of the period 1884–94, and then made his residence in France and England. Among his works are *The Mexican Guide* (1887), *The Aztec Treasure House* (1890); *The Uncle of an Angel and Other Stories* (1891); *Stories of Old New Spain* (1891), material for which was largely derived through visits to Mexico and New Mexico; *An Embassy to Provençe* (1893), the chronicle of a European journey; *In Old New York* (1894), popular historical sketches; *In the Sargasso Sea* (1898); *The Passing of Thomas, and Other Stories* (1900); *In Great Waters* (1901); *The Christmas Kalends of Provençe* (1902); *The Dutch Founding of New York* (1903); *Santa Fé's Partner* (1907); etc.

JAPAN, n. *jă-păn'*, or JAPAN-WORK [from the country in Asia so called]: work varnished and figured in the



JAPAN.
SCALE OF STATUTE MILES.
0 50 100 150
Copyright, 1904, by Rand. McNally & Co.
RAND, MC NALLY & CO., ENGRAVERS, CHICAGO.
Longitude from Greenwich.
OUTLINE MAP OF JAPAN.
SCALE OF MILES.
0 200 400 600 800
EZO AND CHISHIMA
SCALE OF MILES.
0 50 100 150 200
SEA OF OKHOTSK
RYUKYU IS. (LOO-CHOO IS.)
SCALE OF MILES
FORMOSA.
SCALE OF MILES.
0 25 50 100
PACIFIC OCEAN
SEA OF JAPAN

manner practiced by the natives of Japan. JAPAN′, a varnish for articles made of metal or wood, generally made of linseed-oil, umber, and turpentine: V. to varnish as the natives of Japan do; to cover with varnish or japan. JAPAN′NING, imp.: N. the art of giving a black or glossy surface to, and drawing figures on, as on wood. JAPANNED′, pp. *-păn̆d′*, made with a black and glossy varnish. JAPAN′NER, n. *-nėr*, one who varnishes.

JAPAN, *jă-pan′* [corruption of Marco Polo's *Zipangu;* native name, *Dai Nippon* or *Dai Nihon* (fr. *dai*, great; *ni*, sun; *hon*, root or rising), Land of the Rising Sun]: island-empire lying off the northeast coast of Asia, long remarkable for the proud isolating policy of its rulers, and now claiming special consideration, on account both of its recent renewed relations with the civilized world, and of the wonderful changes that during the last few years have been in progress in the country. Besides Nippon or Honshu, Kyushu, and Shikoku three large mountainous and volcanic islands, with about 500 smaller islands, forming Old Japan or Japan proper, it comprises the outlying large island of Yezo or Hokkaido, north of Honshu, separated by Tsugaru Strait; the long chain of the Chishima, or Kurile, Islands between Yezo and Kamchatka; the Ryukyu or Luchu Islands, stretching southwestward, toward Formosa, and lastly, Taiwan (Formosa) and the Pescadores Islands, acquired as a result of the war with China in 1894, together with the southern part of Karafuto Sakhalin, ceded by Russia in 1905. The Japanese dominions are separated from the Asiatic continent by the Sea of Okhotsk, the Sea of Japan, the Strait of Korea, Tong Hai or the Eastern Sea, the Strait of Tokien or Formosa, and are distant from China 420 miles, from Kamchatka 270 miles, and from California, 5,000 miles. The area of Japan proper is estimated at 109,078 square miles, of which Honshu, the main island, occupies 86,524, Kyushu 15,543, and Shikoku 7,011 square miles. Yezo has an area estimated at 30,058 square miles; adding the Kurile and Syukyu Islands, Formosa, Sakhalin, (33,122 square miles) and other smaller islands 1,075 square miles, the total area of the empire is 173,333 square miles. The native term *Niphon*, *Nipon*, or *Dai Nippon*—'Great Nippon', the latter word meaning 'Sunrise' or 'East,' a former specific name for the largest island of the group, is really the name of the empire, the Japanese now calling this island Honshu. The capital of the empire is Tokyo or Yeddo; other important towns are Osaka, Kioto, Nagoya, Kobé, Yokohama, Hiroshima, Nagasaki. Pop. 46,732,841.

*Physical Features.*—The largest island, Honshu, is upward of 700 miles long northeast and southwest, breadth varying from 50 to 100 miles; Kyushu, on the southwest, separated from Honshu by the Strait of Shimonoseki, which in one part is narrowed to 2 miles width, is about 200 miles long north to south and 120 miles broad;

Shikoku, the third and smallest of the three principal islands, is 140 miles long by 60 miles broad. It lies east of Kyushu, and is separated from it by the Strait of Bungo, which at its narrowest part is not more than 10 miles broad. The straits which divide Shikoku from Honshu are scarcely broader, and are thickly set with small islands. The more or less enclosed stretch of sea between Kyushu, Shikoku and Honshu is known as the Inland Sea. Thousands of isles and rocks are scattered near the coast, especially in the famous Seto-uchi or Inland Sea, which stretches between the three large islands, Honshu, Shikoku, and Kyushu, and is connected by very narrow straits with the Pacific Ocean and the Sea of Japan. Yezo is of a roughly triangular form, having its sides respectively 300 miles, 260 miles, and 220 miles in length. It is separated from Honshu on the southeast by the Strait of Tsugar, Matsmai, or Sangar, about 8 miles broad in the narrowest part. West of Honshu lies the important island of Sado. The coasts of the larger islands are extremely irregular, being deeply indented with gulfs, bays, and inlets, which form magnificent harbors, although in the north especially, they are difficult of access; not only from the multitude of rocks and islands that surround them, but from the prevalence of gales and fogs. The crustal movements of the earth have generated large mountain systems, which are again separated into several ranges. Some of these ranges are nearly 10,000 feet in height and exhibit landscapes of Alpine character. Moreover, owing to these terrestrial disturbances, we find many volcanic chains, which are arranged mostly along but sometimes across the principal trend of the archipelago. Many of the lofty peaks in this country are the magnificant cones of volcanic origin. Plains could not develop to any great extent in such a land. They are found occasionally along sea-coasts as well as along the banks of large rivers. Comparatively well developed plains are found in delta districts, which are generally fertile and densely populated. Also in mountain districts we meet some basins, sometimes with lakes nestling in their centres. The Japanese islands form a part of the line of volcanic action which commences, in the north, with the Aleutian Isles, passes through the Philippines, Sumbawa, and Java to Sumatra, and then in a northwest direction to the Bay of Bengal. The volcanic vents, which indicate the direction of the line, are numerous in Yezo, Honshu, and Kyushu; earthquakes, often causing great devastation, are of frequent occurrence, and it is calculated that every seven years a Japanese city is destroyed by their agency. In Yezo some dreadful eruptions have occurred—one in 1783 destroyed 23 villages; and the volcano of Wunzendake, one of five active in the island of Kyushu, is the terror of the surrounding inhabitants—an eruption of it in 1792 having destroyed 53,000 people. Almost equally disastrous was

the tidal wave in 1896, which, besides causing the death of over 26,000 people, injured many thousands more, and destroyed a vast amount of property. The main island is traversed throughout its whole length by a regular chain of mountains, the highest peak of which variously called Fuji-san, or Fuji-yama,—Matchless Mountain, a dormant volcano, covered with perpetual snow—is 12,-392 feet high; but the elevtion of the range is in general so low as to admit of cultivation up to the watershed of its streams. Among the numerous lofty peaks of Honshu are Nantai-zan (8,144 feet), Asama-ya-ma (8,134), Kobushi-daké (8,062), Kimpu-zan (8,367), Yatsu-ga-také (9,637), Tateshina-yama (8,298), Myoko-zan (8,049), Koma-ga-také (9,843), Ho-o-zan (9,551), Yari-ga-také (10,142), Hodaka-yama (10,168), Jonenbo-daké (10,168), Otenjo-daké (10,447), Shirouma-ga-také (9,624), Ontake (10,447), Norikura-ga-daké (10,385), Tateyama (9,630), Ken-ga-mine (9,840), Haku-san (8,659), etc. The other islands also abound in mountains, though of less elevation. Yezo has no fewer than eight active volcanos. Throughout the empire are many solfataras, and sulphurous springs well up from hundreds of volcanic valleys. The plains, most of the valleys, and many of the lower hills, are highly cultivated; nevertheless, the area of forest is said to be four times as great as that of the cultivated land.

*Hydrography.*—Streams are numerous in Japan, but have very short courses, and are for the most part rather torrents than rivers. Though valueless as channels for the development of commerce they are of great value for the purposes of irrigation. The principal rivers or gawas of the main island are: the Shinanogawa, which rises in Shinano, and after a northwestward course of 320 miles flows into the Sea of Japan; the Tonegawa, which rises in Kodzuke, and after a course of 170 miles flows into the Pacific near Tokio; the Kisogawa, which enters the gulf of Izeh; and the Yodogawa, the outlet of Lake Biwa, which flows into Osaka Bay. Ishikari in Yezo is the longest river of Japan, having a course of 407 miles. There are a number of lakes scattered throughout the islands, the largest being Biwa or Omi, in the southern part of Honshu, 40 miles long.

*Geology and Mineral Resources.*—The prevailing formations in these islands are trachyte and basalt; plastic clay, marl, and feldspar occur in various localities; and there are whole mountains of porcelain earth. The metallic wealth of the empire is considerable and comprises gold, silver, copper, tin, lead, and iron. The island of Sado is particularly rich in auriferous ore. Both the tin and copper of Japan are of superior quality, the copper production being about 70,000,000 pounds annually. Coal is found in several districts, and the output is gradually increasing, amounting to over 10,000,000 tons annually. Petroleum is becoming a product of some con-

sequence, 52,500,000 gallons of crude oil being produced in 1905. Sulphur abounds; thermal and mineral springs are of frequent occurrence; and ambergris is met with on some of the shores. Among the precious stones are agates, carmelians, and jaspers, while pearls are found in the shell fisheries around the islands.

*Climate.*—The climate of Japan, though extremely various—being intensely cold in the north and warm in the south—is, on the whole, much milder than its latitude would indicate; owing, chiefly, to the influence of the surrounding ocean. A remarkable difference of climate exists also between the east and west shores; the cold being more intense on the latter than the former, owing to the proximity of the Asiatic continent; while the east coasts are protected from the cold continental winds by the lofty central ridge of mountains that traverses the islands north to south. From March to the second half of May a splendid spring prevails; from June to September summer extends, introduced by heavy rains followed by intense heat; from September to the end of November there is a brilliant autumn; and three months of winter succeed, rendered not unpleasant by the continued serenity of the sky. In Kyushu, and in the south parts of Honshu, the thermometer ranges between 29° and 104° F., 80° being the average in the middle of summer, and 35° in the coldest months of winter. In lat. 32° N. ice is formed of several lines in thickness; in lat. 36° the lakes are covered with a sheet of ice, and in 38° to 40° the ice becomes so thick that the rivers may be crossed upon it; while in Yezo, near Cape Saga, lat. 45° 21′ N., winter is so severe as to drive the hardy Ainos to the protection of caverns. Rain is very frequent; hurricanes and water-spouts also occur often, and typhoons and equinoctial gales frequently sweep about the change of the monsoons.

*Flora.*—The flora as a whole resembles that of a great part of North America. The vegetation is exceedingly various, the products of the tropics being intermingled with those of the temperate and frigid zones. The betel-nut palm, banyan, bamboo, the Pandanus, the tree-fern, bignonia, and myrtle flourish. Sweet oranges, pomegrantes, pears, apricots, peaches, and above 500 of the principal ornamental and useful plants are of foreign origin, having probably been introduced from Korea and China. The *kadsi*, or paper-tree, a species of mulberry, grows naturally in the fields, and furnishes textile fibres from which paper is produced; paper is also made from various other plants. The chrysanthemum is a common and favorite plant, and has become an emblem of Japan. The camellia, cultivated in several hundred varieties, grows to a large size, and is a great favorite both for the beauty of its leaves and of its flowers. Cultivated plants include the tea-plant, rice, sugar-cane, sweet-potato, and the ananus. The trees include the camphor, oak,

pine, wax, beech, 'Onara,' the horse-chestnut, the arbor vitæ, fir, lacquer, the ginko, the air, spruce, larch, birch, alders, poplars, etc. The fir and cedar grow to immense size, the latter sometimes to the diameter of 18 feet. Of the oak, two species are peculiar to the country; their acorns when boiled form a palatable and nutritious article of food. The mulberry and the varnish tree grow wild. The nuts of the latter yield solid oil for candles, as do those of the camphor tree, which lives to a great age, and attains a great size. A camphor tree observed by Kämpfer in 1691 was then 36 feet in circumference, the same tree measured by the Dutch traveler Siebold in 1826 was 50 feet in circumference.

*Fauna.*—In consequence of the general cultivation of the soil the wild animals are necessarily few in number; but bears, hyenas, deer, hares, foxes and wild boars are still found in the north of Honshu. Dogs are common; there is a small highly prized spaniel, from which it is supposed was derived the English variety known by the name of King Charles. Flying squirrels, monkeys, the pangolin, bison, 'tanuki,' otter, the marten and the seal are faunal features. There is a great variety of birds—including song-birds, birds of prey, birds of the pheasant kind, and in particular numerous water-birds, of which the cormorant is trained to catch fish for its owner. Snakes are not unfrequent, and at least one species is venomous; there are also tortoises, lizards, scorpions, and centipedes; and of the insect tribes there are white-ants, winged grasshoppers, and several beautiful varieties of moths. The surrounding seas abound in great varieties of fish constituting important sources of food supply and fertilizing agents which are receiving systematic and scientific exploitation. The chief varieties of these are the bonito, tunny, Spanish mackerel, snapper, sardine, and the anchovy. Herring, cod, dog salmon, 'Ayu,' 'Shirauwo' and pearl oysters are taken in considerable quantities. The 'Rabuka' a primitive shark, is famous throughout the world.

*Agriculture.*—The soil of Japan is naturally indifferent; but the patient industry of the agriculturists, favored by the genial climate, has covered with vegetation every spot capable of bearing anything. Agriculture is greatly promoted by a law which provides that land remaining unused for more than a year shall become forfeited to the public. The agriculture of the Japanese is conducted with diligence and skill. Irrigation is judiciously applied, and manure of all kinds is carefully collected and used in the production of generally abundant harvests. According to the latest statistics there were 12,965,371 acres under crops, 40,917,426 acres in forests and 4,328,182 acres devoted to forage and pasture. In the south the sugar-cane is cultivated with success; and rice yields two harvests, and constitutes the chief article of food. Wheat and barley, maize and mil-

let, are grown to an important extent, and buckwheat, potatoes, melons, pumpkins, and cucumbers in great abundance. Ginger, pepper, cotton, hemp, and tobacco are cultivated in considerable quantities; and there are extensive plantations of the tea plant—yielding, however a product inferior to that of China. The principal crop productions according to the last census were as follows: Rice, 1,028,604,420 bushels; barley 178,540,500 bushels; naked barley 137,124,640 bushels; wheat 77,179,820 bushels; awa 39,619,780 bushels; hiye 18,537,540 bushels; millet 7,487,800 bushels; buckwheat 23,524,460 bushels; soybean 74,209,180 bushels; and adjuki 14,601,940 bushels. There were also large crops of potato and sweet potato, rape, cotton, hemp, ai, tobacco, and tea. There are about 750,000 acres under mulberry and about 2,700,000 lacquer trees. The area of fruit trees is fast increasing, among which may be mentioned mikan or Japanese oranges, pears, peaches, Kaki (Diosporya Kaki) apples, grapes, etc. Apples were introduced in the beginning of the Meiji era, and they are extensively cultivated, especially in the northeastern provinces and Hokkaido, though unfortunately on account of downy aphis they suffer much damage, and in some districts their cultivation has been entirely given up. Silk is also a product of importance. Horticulture is highly developed and Japanese gardeners have long attained the art of dwarfing and unnaturally enlarging vegetable productions. Instruction in agriculture is given in more than 1,000 supplementary schools, and two government and one private higher schools, and the common and higher normal schools also give courses; there are two government sericulture institutes; and numerous agricultural societies which promote the industry.

*Stock-raising.*—Buffaloes and zebus are common and are used principally as beasts of burden and for agricultural purposes. Horses of various breeds—but generally small—in 1906 amounted to 1,390,017; the cattle numbered 1,200,135; pigs 191,952; goats 67,972, and sheep 2,769. Poultry-farming is also receiving increased attention.

*Manufactures.*—The Japanese work admirably in iron, silver, gold, and all metals. Manufactures are carried on in every part of the country, and some of them are brought to such a degree of perfection as to surpass those of any other part of the world. Their lacquering in wood excels that of all other nations. They work with great skill in *sowas*, a mixture of gold and copper, which they color blue or black in a manner unknown elsewhere. Their silk and cotton goods are well made, and glass, pottery, and porcelain in all their branches are of superior manufacture. Their steel swords are unapproachable in quality, and they make excellent mirrors of steel. Paper is made from the bark of the mulberry tree in great abundance and of remarkable strength; it is used

not only for writing and printing, and for wrapping goods, but for handkerchiefs and napkins. The Japanese are skilful in carving and die-sinking, and in the casting of metal statues, which are extensively used for idols. Their iron works, tobacco factories, breweries, distilleries, and other manufacturing establishments on a large scale, employ hundreds of workmen. The cities of Kioto, Tokio, and Osaka are the great seats of manufactures. At Kioto are made damasks, satins, taffetas, and other silk fabrics of every kind, lacquered articles, caps, scarfs, screens, fans, pins, bowstrings, paints, tea-boxes, grindstones, and porcelain and earthenware; at Osaka cotton goods and iron ware; and at Tokio nearly every species of manufacture is carried on. Government ownership of public utilities and manufactures such as railroads, telegraphs, and telephones, salt, tobacco, and camphor, and governmental supervision of industries, control and foster their development. Ordnance, firearms, ammunition, and supplies are made at the Tokio, Osaka, Shimose, and Senji arsenals, and steel and iron ware and merchant vessels at the Yokosuka, Kuré Maizura, Takeshiki, and Ominato shipbuilding and dockyards.

*Railways, Posts, Telegraphs, etc.*—In 1906 there were 4,746 miles of steam railroad in operation, several extensions and new tracks projected and building, and over 300 miles of electric street railroads. In March 1906, the Imperial Diet promulgated a bill nationalizing the railroads. In 1906 the mercantile marine comprised 1,988 steamers of 939,749 tons, 4,132 sailing vessels of 336,571 tons, and over 1,000 small native crafts. In 1904–5 there were 6,524 post-offices throughout the empire handling annually a mail of 929,286,136 pieces. In the same year there were 16,482 miles of telegraph lines and 2,173 miles of submarine cable. The number of telegrams delivered in the year was 19,410,674. The telephone service consisted of 5 bureaus, 323 call offices, 35,065 subscribers, and 3,021 miles of communication.

*Commerce.*—In 1852 American diplomacy succeeded in removing the restrictions which for centuries hampered foreign intercourse with Japan. Prior to that date the foreign commerce of Japan was limited to the Chinese and the Dutch. The Chinese trade was confined to Nagasaki, where a few junks arrived annually from the ports of Amoy, Ningpo, and Shanghai. The Dutch were allowed to visit the port of Nagasaki, where they had a factory on a small island called Desima, in which 12 or 13 merchants lived, closely watched by the Japanese, and allowed very little liberty. Two ships were annually sent from Batavia. The rapid introduction of railways particularly throughout the main island greatly stimulated trade and as Japan progressed in its career of modern expansion, each year showed a substantial increase in exports until in 1904 they reached $158,995,795.71. The leading items of export then were: Raw

silk, $44,000,000, of which the United States took $30,000; silk manufactures, $22,000,000, three per cent of which came to the United States; cotton yarns, $14,500,000; copper, $6,500,000; coal, $47,500,000; cotton fabrics and matches, each $5,000,000; tea, $6,000,000; mats and matting $2,500,000; rice, $2,300,000; camphor, $1,500,000; cuttlefish, $1,300,000; cigarettes, $1,250,000; porcelain and earthenware, $2,000,000. In the six months ending with June, 1905, the exports and imports totaled $213,757,006; the United States led in the export trade, taking from Japan in that period merchandise valued at $32,518,509, China being second with $21,931,507. British India led in the import trade with $34,030,288; Great Britain being second with $32,623,660; and the United States third with $20,304,294. The foreign trade is carried on chiefly through the ports of Yokohama and Kobé. The ports of Osaka, Nagasaki, and Moji-Shimonoseki have a large export trade. The chief items of import are metals and metallic ware, machinery, arms, cottons, woolens, etc.

*Weights, Measures, and Money.*—A modern monetary law based on the metric system came into force in October, 1897. The unit of value is the yen, equaling 0.75 grammes of pure gold. The gold coins consist of 20, 10, and 5 yen pieces, the silver coins of 50, 20, and 10 sen pieces, a nickel piece of 5 sens, and bronze coins of 1 sen and 5 rin pieces. The yen is divided into a hundred sen, and the rin is the tenth part of a sen. The weights are the mommé 0.2666 mommé = 1 gramme; the kin (160 mommé) = 1.325 pounds avoirdupois; and the Kwan (1,000 mommé) = 8.21 pounds avoirdupois. The measures are the shaku = .994 foot, 3.3 shaku equaling 1 metre; the Sün = 1,193 inches; the ken (6 shaku) = 5.965 feet; the chô (60 ken) = 1/15 mile; the ri (36 chô) = 2.44 miles; the square ri = 5.9552 square miles; the chô land measure = 2.45 acres. The liquid koku = 39.7033 gallons; the dry koku = 4.9629 bushels; the liquid to = 3.9703 gallons, the dry to = 1.9851 peck.

*Banking.*—The principal bank of Japan is the Nippon Ginko or National bank, founded in 1882 and authorized to issue notes convertible to gold on presentation. In 1907 it had a registered capital of 30,000,000 yen, fully paid; reserves of 20,750,000 yen; and the convertible notes issued amounted to 294,202,480 yen, of which 139,681,012 yen were backed by specie reserve. The government exercises strict supervision over the bank and appoints the governor and vice-governor. Other special banks are the Yokohama Specie Bank (for conducting foreign exchange business) with capital of 24,000,000 yen and reserves of 14,784,861 yen; the Hypothec Bank of Japan (organized to promote agricultural and industrial progress), with capital of 10,000,000 yen (3,250,000 paid up), and reserves of 1,372,309 yen; the Farmers'

THE PARLIAMENT HOUSE AT TOKIO.

and Mechanics' Bank with 46 branches, capital 28,820,000 yen (28,494,860 paid up) and reserves of 4,221,199 yen; the Bank of Formosa, capital 5,000,000 yen (3,750,000 paid up) and reserves of 725,000 yen; the Hokkaido Colonial Bank (to further the colonization of Hokkaido), with capital of 5,000,000 yen (3,500,000 paid up) and reserves of 63,336 yen; the Industrial Bank of Japan with 17,500,000 yen capital (17,000,000 paid up) and reserves of 512,800 yen; and the Dai-Ichi Ginko, Ltd., with capital of 10,000,000 yen (7,000,000 paid up) and reserves of 2,950,000 yen. All of these banks are under the direct and strict supervision of the government to a greater extent than the ordinary and savings banks. In 1907 there were 1,722 ordinary banks (trust companies, joint stock companies, private banks, etc.), with capital of 395,607,319 yen (256,523,748 paid up) and reserves of 68,180,543 yen. Of these banks 198 had savings departments. Besides the above banks there were 460 savings banks with capital of 81,508,450 yen (42,811,827 paid up) and reserves of 9,824,390 yen.

*Finances.*—The estimated revenue for 1905–6 was $189,231,398 and the expenditure $105,262,218. The chief items of revenue are the land tax, 2½ per cent. of the market value of the land, the taxes on saké and other liquors, the tobacco monopoly, customs dues, stamp duties, income tax, and the profits on the public utilitarian services controlled by the government, telegraphs, posts, railways, mines, etc. The principal items of expenditure for 1904–5 were the army $18,635,686, navy $10,908,976, justice $5,098,526, communications $9,971,933, finance $29,712,626, etc. War finance representing the conflicts with China and Russia is treated separately; receipts and expenditure for war purposes to April, 1904, amounted to $288,000,000; the public debt to $282,459,475.

*Government.*—The absolutism of the sovereign has been a primary feature of the government of Japan from time immemorial, though public affairs were administered through a supreme council, consisting of the premier, vice-premier, and heads of the great depts. of state, and subordinate to it through a legislative council under the presidency of an imperial prince, and an assembly of provincial governors. Since the middle ages, the sovereign, when seen by his subjects, sat with folded arms in his palace, his feet never touching the ground, none but a few of the most august nobles being permitted to approach him, and the whole people regarding him as an unusually sacred personage. But since 1868 the government has been that of the system that prevailed from the 7th to the 12th century, modified by the adoption of features from the U. S. and European governments the drift of affairs has been toward a constitutional monarchy, the old feudal system has been abolished, and the mikado takes an active part in public concerns, and is

as approachable as the pres. of the U. S. The basis of the reformed government is the Japan Magna Charta, the 5 declarations made and sworn to by the present mikado, 1868: '(1) We will invite discussions far and wide, and decide all measures according to popular wishes; (2) We will unite the upper and the lower (all classes of people), and ameliorate the nation energetically; (3) We will unite the fountains of honor (the court) and of power (the tycoonate) in one hand, and endeavor to satisfy the wishes of every citizen; (4) We will wipe out the abuses of former times, and conduct all measures according to the rules of heaven and earth; (5) We will seek wisdom and intelligence all over the world, and strengthen the foundation of the empire.' 1881, Oct. 12, the mikado further promised to establish a national parliament with limitation of the imperial prerogative; and in order to prepare the material for a house of nobles, issued a rescript 1884, June 6, creating 5 orders of nobility, princes, marquises, counts, viscounts, and barons, the individual selections to be made (1) according to the age and standing of the family, and (2) according to the individual's service to the country. The last step in this remarkable transformation of government initiated by the sovereign was taken 1889, Feb. 11, when the mikado sanctioned the establishment of a constitutional form of govt. to go into effect 1890, April 1.

According to this constitution the mikado is sovereign of the empire, can declare war, make peace, and conclude treaties; and exercises executive powers with the advice and assistance of his cabinet, who are appointed by himself. The privy council is the supreme deliberative body attached to the sovereign, whom it advises whenever it is consulted upon important questions of national policy. Its function is, first, to decide disputes arising from the interpretation of the constitution, or the quasi-constitutional laws, such as the law of the houses, the election law, the law of finance, and the like, or disputes in regard to the budget or other financial measures; and, second, to deliberate upon amendments to the constitution, or amendments to the quasi-constitutional laws. The cabinet includes the prime minister and the statesmen at the head of the foreign office, treasury, war, navy, education, public works, etc. The legislative power is vested in the mikado and the diet or parliament, which consists of two houses, a house of peers and a house of representatives. The former consists of members of the imperial family, princes and marquises; counts, viscounts, and barons elected by their respective orders; and a certain number of persons nominated by the emperor and by a few wealthy taxpayers, the total number being about 300. The house of representatives numbers 300; the members being elected for a period of four years, so many from each electoral district. They are paid, as are also the nominated members of the house of peers.

The system of election to the House of Representatives was reformed in 1900, and a new election held in 1902. One member is allowed to 123,000 inhabitants. The president and vice-president of the House of Peers are nominated by the Emperor from among the members; and the president and vice-president of the House of Representatives are nominated by the Emperor from three candidates elected by the house.

*Judiciary.*—The administration of justice is intrusted to (1) one *Tai-shin-in,* which combines the powers of the U. S. Supreme Court and the French Court of Cassation, and is presided over by one chief justice and 6 associate justices, exercising an appellate jurisdiction over the courts of appeal, and an original jurisdiction in serious crimes against the imperial house and state, and in serious charges against members of the imperial family; (2) 7 *Jo-to-sai ban-sho* (courts of appeal) presided over by five judges and hearing appeals from the decisions of the district courts; (3) 49 district courts presided over by three judges, exercising a more extensive jurisdiction in civil and criminal cases, and a revising jurisdiction over the subdistrict courts; and (4) 302 subdistrict courts for all petty, civil, and criminal cases. The judges are appointed by the Emperor; but he can select only those who possess the proper qualifications according to the provisions of law. In order that a trial may be conducted with justice and impartiality, the judges are appointed for life, independent of dismissal either by the Emperor or by the Parliament, and they can be discharged from their office only by a sentence passed by the criminal court, or upon the disciplinary trial, whose rules and proceedings are to be decided by law.

*Local Government.*—In 1876 a new division of the empire into districts or prefectures for local government was made, namely, 43 *ken* or rural districts, and 3 *fu* or residential districts: Tokio (Yeddo), Osaka, and Kioto. The prefectures are subdivided into *shi* = municipalities, and *gun* = counties; the counties are again subdivided into *chō* = towns, and *son* = villages. The units of local government are village, town and municipality, forming local corporations of the same name; supervising all are the prefectural governor, assembly and council. Citizenship and electoral qualifications are conferred on all male Japanese not less than 25 years of age who for two years reside in a municipality, town, or village, share its burden, and pay land tax or not less than $1 direct national tax annually.

*Army.*—All male Japanese subjects from 17 to 40 years of age are liable to service in the permanent army, the territorial army, the national militia, or the reserves. The permanent army in 1904 comprised 16,323 officers, of whom 10,069 were in active service, 4,243 in the first reserve, and 2,011 in the second reserve, and 194,495 men. The equipment and discipline of the army was shown to

be thoroughly effective and up-to-date in the war with China in 1894, during the Boxer rising in 1900, and in the Russo-Japanese war of 1904–5. The Japanese military schools are excellent, and contain over 2,000 students. Military education is given in the following schools: (1) Military Staff College; (2) Military College of Artillery and Engineering; (3) Military College, a cadet's school; (4) Military Toyama Schools; (5) Central Military Preparatory School; (6) Local Military Preparatory Schools; (7) Military Cavalry Practice School; (8) Military Field Artillery Practice School; (9) Military Siege Artillery Practice School; (10) Telegraph Educational Battalion; (11) Military Comptrollers' School; (12) Military Surgeons' School; (13) Military Veterinary School; (14) Military Artillery and Engineering School; (15) Military Bandsmen's School, attached to the Toyama School.

*Navy.*—The modern and remarkable navy of Japan dates its origin from the purchase of the U. S. govt. of the old Confederate cruiser *Stonewall Jackson,* and the offer of the U. S. government to Japan of the privilege of sending 5 Japanese students to the U. S. Naval Academy annually. A large number of boys, mostly of noble families, were thus educated side by side with American cadets, and on the completion of their 4 years' course were immediately recalled by their govt., and on filing their certificates of graduation at Annapolis were commissioned lieutenants in the imperial navy, and at once started on active careers. After the China-Japan War the Japanese navy commenced the building of battleships and cruisers under the new scheme to increase its strength, and at the outbreak of the war between Japan and Russia in 1904, the Japanese force consisted of 6 battleships of 13,000-15,000 tons; 8 armored cruisers of 7,700-10,000 tons; 14 protected cruisers of 3,000-4,800 tons; 10 coast-defense ships of 7,000 tons and under; 19 gunboats, etc., of 2,000 tons and under; 19 torpedo-boat destroyers and 87 torpedo boats. The aggregate tonnage of the above was about 270,000 tons. At the end of the Russo-Japan War, the loss sustained by Japan was as follows: 2 battleships; 2 protected cruisers; 2 coast-defense ships; 4 gun vessels, etc.; 2 torpedo-boat destroyers; and 9 torpedo boats. The captured Russian men-of-war, etc., augmented the Japanese Navy as follows: 6 battleships of 9,600-13,500 tons; 1 armored cruiser of 7,700 tons; 2 protected cruisers of 6,600 tons; 2 coast-defense ships of 4,900 tons: 2 torpedo gunboats of 400 tons; and 3 torpedo-boat destroyers. Since that time the navy has suffered the loss by internal explosion of the battleship *Mikasa*, Admiral Togo's flagship, in the battle of the Sea of Japan in 1905 and the addition of several ships, notably the battleship Satsuma, launched 1906, Nov. 15, so that in 1908 the Japanese navy consisted of 11 battleships of about 10,000 tons or more dis-

placement; 11 armored cruisers; 19 smaller cruisers, including all unarmored vessels above 1,000 tons; 54 destroyers; 77 torpedo boats; 7 submarine boats; and 3 coast defense ships. These figures do not include those ships over 20 years old. For the fiscal year ending 1907 the number of officers and men voted for the navy were as follows: Officers, 3,088; warrant officers, 976; petty officers and men, 34,701. Officers and men in reserves in 1907 numbered: Officers of N. R., 322; warrant officers, 143; petty officers and men, 13,978. A programme laid down for strengthening the Japanese navy began with the year ending March 31, 1904, and provided for an expenditure of $49,930,152 to be spread over 11 years. Of this $31,174,134 was to be spent on warships. The facilities for naval construction and repair possessed by Japan are exceptional. The naval arsenal at Yokosuka, the foundations of which were laid by French engineers, has grown to great dimensions. The principal dockyard is large enough to admit the heaviest battleship afloat. Other fully equipped imperial dockyards are situated, that of Kuré with fortifications on adjacent islands, near the west entrance to the Inland Sea, and that of Hiogo-Kobé, protected by forts at Wakawama and on the island of Awaji, near the eastern entrance. Sasebo, a fortified naval port approached by narrow winding channels, is on the west coast of the southern island of Kiusiu. The Tsugaru Strait separating Hondo and Yezo is fortified at Omazaki and Hakodate. The naval academy is situated at Tokio.

*Education.*—Education is almost universal, the poorest and lowest laborers being taught to read and write. The women are educated with nearly as much care as the men, and there are extraordinary facilities for elementary, secondary and university instruction. During 1905–6 the percentage of children of school age receiving the prescribed course of elementary instruction was 97.72 for boys and 93.34 for girls. The total number of elementary schools was nearly 27,000. The number of teachers fell but a little short of 93,000, and the total number of children in the schools was 5,348,213. The training of teachers receives careful attention, conditions of the school buildings are undergoing continual improvement.

There are seven secondary schools, in different parts of Japan, which are intended as preparatory for the universities. There are also a number of special schools in which the direct practical applications of the subjects studied are kept in view. In the Tokio Foreign Languages School, English, French, German, Russian, Italian, Spanish, Chinese and Korean are taught. The Tokio Fine Arts school provides five courses of study, including painting, designing, sculpture, architecture and industrial fine arts. The Tokio Academy of Music furnishes complete instruction in both Japanese and foreign

music. There are technical schools intended to prepare men to take charge of industrial operations. The agricultural school at Supporo trains agriculturists for the island of Yezo, which is to Japan what Alaska is to the United States. The Tokio Technical School trains managers and foremen of factories, and a similar institution, already fully equipped, has been started in Osaka. Even the commercial aspect of education is not overlooked; the higher commercial school in Tokio has over 50 instructors and 650 pupils.

There are in Japan two universities, the Imperial University of Tokio and the Imperial University of Kioto. The former comprises a University Hall and six colleges of law, medicine, engineering, literature, science and agriculture. The college of engineering offers nine courses: civil engineering, mechanical engineering, electrical engineering, naval architecture, technology of arms, civil architecture, applied chemistry, technology of explosives, and mining and metallurgy. The University of Kioto, though founded much later than that of Tokio, includes colleges of law, of medicine, of science and engineering and of literature. The college of science and engineering provides courses in mathematics, physics, pure chemistry, chemical technology, civil, mechanical and electrical engineering, and mining and metallurgy. The Japanese government in the budget of 1907, authorized the creation of two new independent universities, one in the north and one in the south of Japan.

There are laboratories for special purposes and many public libraries, and the combination of educational forces exhibits the astonishing progress in education made by Japan within 30 years.

In 1906 the attendance at schools was as follows: blind and dumb schools, 1,433; middle schools, 104,968; high schools for girls, 31,918; colleges, 4,904; Imperial universities, 5,821; special schools, 25,054; technical schools, 165,125; normal schools, 18,924; higher normal, 960; higher normal for girls, 361; teachers' special training schools, 154; institutes for the training of technical school teachers, 175; elementary schools, 5,348,213; miscellaneous, 133,902; total, 5,841,302. There are about 27,000 elementary schools, 220 middle schools, 8 high schools, 55 girls' high schools, 55 normal schools, 2 higher normal schools, 400 special and technical, 1330 various, 2 universities, and 250 kindergarten schools.

*Religions of Japan.*—There are two prevailing religions in Japan—*Shintô or Kami no Michi* ('The way of the gods'), the indigenous faith; and Buddhism, introduced from China A.D. 538—1. *Shintoism.* The characteristics of Shintoism in its pure form are 'the absence of an ethical and doctrinal code, of idol-worship, of priestcraft, and of any teachings concerning a future state; and the deification of heroes, emperors, and great men, together with the worship of certain forces and objects in

nature.' The principal divinity is the sun-goddess Amaterasu, from whom the mikado is held to be descended. After the Restoration (1868) the government attempted to free Shintoism from the Buddhist innovations which had contaminated it, and to revive it in its pure form as the national religion, but the effort was unsuccessful. The only public recognition now given it are the services in the imperial palace, and the annual payment by the govt. of about $300,000 to certain officers and to keep the tombs of the mikado's ancestors and the memorial shrines of patriots in repair. Shinto temples are singularly destitute of ecclesiastical paraphernalia. A metal mirror stands on the altar, but even this is a Buddhist innovation. The spirit of the enshrined deity is supposed to be in a case, which is exposed to view only on the day of the deity's annual festival. The worship consists merely in washing the face in the font, striking a bell, throwing a few cash into the money-box, and praying silently for a few seconds; nevertheless, long pilgrimages to famous shrines and to the summits of sacred mountains are often taken to accomplish this. Shintoism is rather an engine of govt. than a religion; it keeps its hold on the masses chiefly through its being interwoven with reverence for ancestors.—2. *Buddhism.* Of this there are 12 sects, with 32 subdivisions, having over 70,000 temples and shrines, and 75,000 priests. The monks have assumed the functions of priests, and Japanese Buddhist worship presents striking resemblances to that of the Roman Church. The history of the Buddhist monasteries, too, often reads remarkably like that of the corresponding institutions in mediæval Europe. Notwithstanding the increased patronage recently bestowed on Shintoism by the government, Buddhism is still the dominant religion among the people. The most popular, as well as the wealthiest and most enlightened, of the Buddhist denominations, is the *Monto* or *Shinshiu* sect, which recognizes one God in Amida Buddha (only, however, an abstract principle personified, not the Living God of Christianity), discountenances asceticism and clerical celibacy, and cultivates preaching, the favorite topic being the duty of self-reliance. It would be a mistake to suppose that a clear line can be drawn between adherents of Buddhism and Shintoism respectively; in the popular mind the two faiths are so blended that the temples of both are frequented without much discrimination. The better educated classes are mostly agnostics, striving more or less to regulate their lives by the maxims of Confucius. Many Japanese temples are magnificent specimens of architecture in wood; they are remarkable for their vast tent-like roofs and their exquisite wood-carving. In the operation of establishing an entirely new form of government after the revolution of 1868, a vast number of Buddhist temples were confiscated for public uses, chiefly educational, and the

Mikado promised to aim at complete religious toleration. How well he kept his word is attested by the fact that it was decreed 1884, July 11, that thenceforth there should be no official priesthood, and that all religions, Shintoism, Buddhism, and Christianity should be protected equally, and have a common standing before the law. Under this decree, christianizing influences were more openly and vigorously promoted; and in 1900 there were not less than 500 Protestant Christian foreign missionaries in Japan, almost all American and English, and as many native preachers and helpers, and over 30,000 church members in some 300 Protestant churches. About as many were connected with the Greek and Roman Catholic churches, under the care of Russian and French missionaries. There were also reported the building of numerous additional churches, beside orphan asylums, convents, and theological seminaries, the establishment of Sunday schools, Young Men's Christian Associations, and religious newspapers; and the first consecration in Japan of a Rom. Cath. bp., in Yokohama, 1888.

*Ethnology.*—The Japanese belong to the great Mongolian family of peoples (apart from the Ainos of Yezo, who belong to a prehistoric aboriginal race). The Japanese are of middling size, and generally of a yellow color, though some are brown and others nearly white. Their eyes are small, oblong, and deeply sunk in the head. Their noses are short and thick, and their hair thick, black and glossy. The people of rank have generally fair complexions, and ladies who are not exposed to the sun have sometimes perfectly white skins and blooming cheeks. The men are vigorous and active, and the women well-formed and graceful, while both sexes are of a higher degree of intelligence than is common among Asiatic nations. Their chief moral characteristics are a high sense of personal honor, courage, frankness, and perseverance, with good humor, natural politeness and a large measure of self-confidence. The agricultural population in particular, are distinguished for their industry, temperance, and courteous hospitality.

*Sociology.*—Apart from members of the imperial family, the people are divided socially into three classes: *kwazoku* or nobles, comprising five ranks, corresponding with prince, marquis, baron, etc.; *shizoku* or knights, and *heimin* or common people; the classes are kept distinct with all the strictness of caste. Before 1868 feudalism prevailed in Japan, and the chief nobility were feudal princes called *daimios,* who kept as military retainers, the celebrated *samurai* (q.v.); the distinctive mark of rank was the sword, the wearing of which was strictly prohibited to the lower orders; the middle classes carried one, and the higher ranks two swords, which were worn on the same side, one above the other. The uniforms of both the army and the navy are now fash-

ioned on western patterns; western dress is commonly worn by the upper classes on formal occasions and during the discharge of official duties, and the western method of dressing the hair is almost universally adopted. The national costume, however, has by no means been totally discarded, and is not likely to be among the mass of the common people. The ordinary native dress of both sexes and of all ranks is very similar in form, differing chiefly in the colors, fineness, and value of the materials, those of the higher orders being generally of silk, and of the lower orders of linen or calico. The dress consists of a number of loose, wide gowns worn over each other, with the family coat of arms woven or worked into the back and breast of the outer garment, and all fastened at the waist by a girdle. The sleeves are very long and wide, and the part of the sleeve that hangs below the arm is made to serve as a pocket. The dress of the women very much resembles that of the men, but is usually of brighter colors, and the robes bordered with gay embroidery or gold. Upon occasions of full dress a cloak is worn together with a trousers-like garment called *hakkama*. Indoors, socks are the only covering of the feet. Shoes are worn abroad with soles of straw matting or of wood, which on entering the house are always taken off. Formerly hats were not worn, except in rainy weather, and the whole front and crown of the head was shaved, the rest of the hair being formed into a tuft on the bald skull. Married women tie their girdles before and single women behind. Polygamy is not permitted, but the power of divorce on the part of the husband is limited only by the requisition that he shall provide in a suitable manner for the support of the repudiated wife; though in case she is divorced for barrenness, or for other reasons recognized by the tribunals as sufficient, she has no claim upon the husband for maintenance. Under no circumstances whatever can a wife demand to be separated from her husband. Legal concubinage was abolished in 1880. Prostitution is permitted by law, and the profession of the courtesans or geishas is not deemed particularly disreputable; they are destined to their trade from infancy, and, being generally well educated and accomplished, are often selected as wives by respectable men.

The Japanese are very punctilious in all matters of etiquette, and the rules that govern social intercourse are formed into a regular system, and published in books, which are diligently studied at school. The houses of the Japanese are low, and built of wood. The walls are coated with a cement that gives them the appearance of stone. In the windows the place of glass is supplied by very fine strong paper, which is protected from rain by external wooden shutters. Verandas encircle the houses, and to almost every dwelling, even in the cities, there is attached a garden. Store-rooms or warehouses

made fire-proof by copper shutters and a thick coating of clay are numerous in the cities, where the tradesmen keep their stock of goods, and private families their valuable effects, as pictures, books, etc. Tea is a universal beverage, and smoking is general among the men. In a morning call pipes and tea are served to the guests as regularly as pipes and coffee are among the Turks. At the conclusion of the visit sweetmeats are handed to the visitor on a sheet of white paper ornamented with tinsel. Fish is a general article of diet, and is varied with game, venison, poultry, and all sorts of vegetables, including a kind of sea weed. Food is eaten out of light lacquered bowls and dishes made of papier maché. Feasts are followed by music and dancing, and are commonly closed by drinking tea and a spirit called saké. Though industrious, the Japanese are eminently a social and pleasure-seeking people, are fond of feasts and frolic, and have frequent national holidays. Music, dancing, and the theatre are favorite amusements with all classes. The ladies of the upper classes spend much of their time in the fabrication of pretty boxes, artificial flowers, pocket-books, and purses, and in the painting of fans and pictures of birds and animals. In fine weather they join with the men in all sorts of outdoor and rural amusements, taking especial delight in fishing on the lakes and rivers, in vessels elegantly fitted up and adorned. The Japanese gentleman is invariably described as a person of pleasing address and most polished manners; even the commonest people are scrupulously observant of the forms of politeness. All classes are remarkably cleanly in their houses and persons, and bathe frequently. There are many public bath-houses in the towns open to all comers for a fee generally equal to the 8th of a cent, where the sexes, prior to its legal prohibition in 1880, bathed together entirely nude, without apparently the slightest idea of impropriety. Suicide formerly was common by the fashionable mode of hari-kari or 'happy despatch' which was generally committed by cutting open the abdomen by two gashes in the shape of a cross. It was tolerated, if not in some cases approved by the laws, and was common as a means of escaping disgrace or avenging an affront, the adversary as a point of honor being obliged to follow the example. It is now legally forbidden. There are numerous benevolent and charitable institutions throughout the empire, work-houses and foundlings established by local corporations and private persons, while the central government provides funds for sufferers from extreme calamities and grants relief to the indigent, the helpless and friendless. Famines frequently occur owing to failures of the rice crop; that of 1906 in northern Japan was greatly alleviated by American benevolence.

*Language and Literature.*—Though the Japanese language is grammatically analogous both to those of the

Mongolo-Tartaric and Manchu-Tungusic families, it differs radically from them. The Japanese language is not monosyllabic (like Chinese), but agglutinate, and has an alphabet of 47 letters, which are written in two different forms, one rendered complex by the addition of variations, known as the Fira-Kana form of character; and the other, the Kata-Kana character, entirely without variations, and consequently much simpler. Its claim to be akin to the Chinese is invalidated by the essential characteristics of the Niphonese tongue, which differs from the Chinese as to the etymic import of its elements and in its polysyllabism. The genuine portion of the former is called *Yomi*, while the Chinese superfetation goes under the name of *Koye*. Although the Korean languages have many features in common with the Japanese, their divergence is radical. The area of the Japanese comprehends the three great islands with some parts of Yezo and other southern Kuriles, of South Sakhalin, and also the Luchu group of islands, where a dialect or closely related language is spoken. The vernacular idiom differs remarkably from the written, by peculiar terminations, particles, and construction. The written language has also a peculiar style, named *naiden*, for religious and mystical subjects, and another, called *gheden*, for profane composition. There are also two styles of allocution, the one of etiquette, the other vulgar. The speech of women also differs in some particulars from that of men. The Yomi is sonorous, soft, and agreeable; almost all words end in vowels, which, however, are often dropped, and in *m* and *n*. Some sounds are of difficult pronunciation to us. A too soft utterance of consonants produces vagueness between the sounds of *p*, *b*, *f*, and *v*; between *s* and the English *z*, *sh* and the French *j*. Athough there are no decided *h* and *l*, some Europeans fancy they hear them, while better phonetic authorities credibly assert that they are generally *f* and *r* respectively. The initial *r* sounds almost like *dr*. The number of original vocables is inconsiderable. Technical terms are generally Chinese, and often much altered. There are two graphic systems. (1) Sinography, somewhat modified. At the request of Ozinteno, the 16th Daïri, Kieu-su-wang (Jap. Kosuvo), king of Pe-tsi (Takusai, in Korea), sent Wang-jin (Jap. Vonin), in 285 A.D., to Japan to introduce there the *Tshin-tsé* (Jap. *Sinzi*, China letters), which were afterward named *Han-tsé* (Jap. Kanzi). From that time both the *Tshin-tsé* and the Chinese language became common in Japan; although the former are peculiarly pronounced, as may be seen in the examples within parentheses below. This divergence is, however, scarcely greater than that of the Chinese dialects from the Mandarin idiom. The sinograms of the learned are called *Taf* and *Sso*. With the varieties of sounds there are about 380 Japanized sinograms, beside the unaltered *Tshin-tsé*. The former are explained by the *Kata-kana*

(see below); thus: *kekkō*, beautiful, by the Jap. *birei; mei-fit* (celebrated pencil), fine writing, by *nō-zio*, etc. Sinograms are sometimes pronounced very differently from their proper sounds; thus: *ye* (the 27th Chinese syllable), river, from the sinographic *sin-kiang; me* (17th Chinese syllable), woman, sinogr. *niù*. Synonyms are often written with the same sinograms. Prefaces of books are commonly written in sinograms. (2) As these did not altogether suit the peculiarities of Japanese phonetism and grammar, Kibi or Kibi-ko (733), who had been educated in China, selected 47 sinograms, and simplified them into syllabic signs, in analogy with their original sounds. This syllabary was named *I-ro-fa*, from the first 3 syllables, just as our alphabet is named from the first two letters. This Irofa, surnamed *Kata-kana* (half letters or signs), is used collaterally with sinograms, explaining their sounds, and serving beside for the indication of grammatical particles; in the same manner as the Manchu interlinear or marginal letters serve in Chinese texts. This form is called sometimes the writing of men. The 2d Irofa, surnamed *Fira-kana* (expanded letters), was contrived by the celebrated bonzes Comiu and Kobo (774–835), and became so manifold by the licenses of the pencil as to be almost illegible, especially owing to additions by a third bonze, Kiakuso, who added a 48th sign for a nasal sound. This is the cursive writing for daily transactions, sometimes called the writing of women. The 3d Irofa is *Mun-yo-kana* (myriad-leaves-letters, so called from the poem *Mun-yo-sio* by Tatsi-bana-no Moroye, about the middle of the 8th century, containing 10,000 verses), and is almost a sinogrammatic prototype of all the Irofas. The 4th is the *Yamato-kana*, a simple cursive script, which is used promiscuously with all the others. The original idea of the Irofa is Buddhistic and Indian. The varieties of form in all the Irofas are a great impediment to expeditious reading, the difficulty of which is increased by the many ligatures between the letters. Writing and reading proceed in vertical columns downward and from right to left. There are also some other diacritic as well as punctuating signs. The former are two, namely: the *nigori*, which is almost like our quotation mark (”), and indicates that the hard or rough sound of a letter is modified, so as to cause the *ko, fo, to*, etc., to be pronounced *go, bo, do;* and the *maru* (°), which indicates tenuification, or hardening, for instance of *fo* into *po*. The marks of punctuation denote also the transposition, repetition, etc., of syllables; they also separate sinograms from Irofas. The order of syllables is as follows: *i, ro, fa, ni, fo, fe, to*, and so on, without any symmetry or analogy. Properly classed, they are: the 5 Latin vowels, *a, e, i, o, u;* the labial *f* with these vowels suffixed (*fa, fe, fi, fo, fu*); the guttural *k* with the same; the *m* with them; then the *s* with them (and

modified by diacritics into *z*, French *j*, Eng. *sh*); then *y*, *t*, *r*, *n*, all with those vowels attached; lastly, two more, *n'a*, *n'c*. The *t* is sometimes *ts*, *dz*, etc. The transcription by Europeans is variable. There is, beside, a kind of metaphony, by which *fò* becomes *fau* and *fafu*; *riò*, *riyau*; *kvo*, *kavau*, *kafau*, etc. This is similar to the Latin *lavo*, *lavatum* and *lautum*, *lotum*; *faveo*, *fautum*, *fotum*, *fœtus*, etc. Dialectic variations depend chiefly on modifications of sounds; in Yeddo, for instance, *r* predominates; elsewhere *f* is pronounced *v*; *fu* like *u*, etc. In the grammar, there is no gender; the male sex is indicated by *vo*, the female by *me*. Substantives do not differ on the whole from adjectives. The latter are often replaced by qualitative verbs or by the particle of the genitive, and are euphonically varied, according to their position; thus, for instance; *akac fana*, red flower; *akashe fanava*, red is flower-the; *akovo naru*, red becomes it (as in Magyar *vörössé lesz*); *aka irono fana*, Lat. *rubri coloris flos*. There is no proper article, but the suffix *va* sometimes determines the acceptation, or shows the French *partitif*; and *sya* signifies 'as regards.' Cases are indicated by suffixes, as in the following example: *sten*, or *sten-va*, Lat. *cœlum*; *sten-no* (oftener *sten-ga*, as in Korean), *cœli*, *sten-ni*, *cœlo*, *versus*, and *ad cœlum*; *sten-ye*, *in cœlum*; *sten-vo*, *cœlum*, accusative (also *sten-voba*); *sten-de*, *cœlo*, ablative; *sten-yori*, *ex cœlo*; *sten-kara*, *de cœlo*, *per cœlum*, etc. The plural is formed by suffixes, as *tatsi*, *domo*, *ra*, *syo*, which signify all, much, many; or by reduplication, as *fito-bito*, men, from *fito*, man, with altered initial. The genitive precedes: *fitono yomi*, Lat. *viri arcus*; *anagono fana*, *mulieris flos*. The numerals are various. We give here the Koye in the first place, and within parentheses the Yomi or common ones first, and after them those of days, namely: 1, *itsi* (*fitots'*, *tsuitats*); 2, *ni* (*fotats'*, *futska*); 3, *san* (*mits'*, *mika*); 4, *si* (*yots'*, *yokka*); 5, *go*, (*itsots'*, *itska*); 6, *vok* (*mots'*, *muika*); 7, *sitsi* (*nanats'*, *nanuka*); 8, *fats* (*yats'*, *yòka*); 9, *kŏ* (*kokonots'*, *kokonoka*); 10, *yo*, (*tovo*, *tovoka*), etc. The other Koye are: 11, *zyo-itsi* (10 + 1); 12, *zyo-ni* (10 + 2), etc.; 20, *ni-zyo* (2 × 10); 30, *san-zyo* (3 × 10), etc.; 100, *fyak*; 1,000, *sen*; 10,000, *man*; 100,000, *vok* (and *raksya*, Sanskrit *lak-sha*, *a lac*); 1,000,000, *teô*; 10,000,000, *kei* (*kotsi*, Sanskrit *kōti*). There are 3 sets of figures of numbers. Many particular words are also used in the sense of numerals, as in Chinese. Of pronouns, those of the 1st and 2d person seem to have been lost in the words of etiquette. I, to equals and inferiors, is *vasi*, to a superior, *vatakusi*; we. to equals or inferiors, *vasi-domo*, to superiors, *vatakusi-domo*. There are more than 12 ceremonious quasi-pronouns for the 2d person. The 3d is *ano fito*, this man, etc. (as in Korean). There are many demonstratives. Relatives are wanting, being supplied by participles or understood from the context

of the phrases, thus: *vasino miru sto*, Lat. *mei (mihi) visus vir*, for *vir quem vidi;* but *vasivo viru sto, me videns, vir*, for *vir qui me vidit.* The verb is the most perfect part of Japanese speech. *Aru* (to be, or to act), united with nouns, produces many compound verbs. It is affected by many moods, voices, and other logical categories, as in the Altai-Uralic and in many American languages; as for instance: *tata-ku*, Lat. *fer-ire, percutere; tata-keru, ferire posse; tata-kerareru, percuti jubere; tata-eteoru, percutientem esse; tata-kau, se mutuo ferire, pugnare; tata-sashereau, facere ut inter se pugnent, bellum eiere*, etc., to a greater extent than the Semitic *kal, piel, nifal, hifil, hithpael.* The suffixes of the tenses are: present, *ru*, past *ta*, future *o;* of negation, *nu, zu.* Persons and the plural are indicated by pronouns. The theme of the verb, which is also a substantive noun, is employed without alteration if others follow, and receives the suffixes only when it is not followed by others, or when it is the last word in the phrase. Various euphonic modifications take place in such a combination with the suffixes. Certain particles denote the moods. The participle is of very extensive application, rivalling that of the Greek. Adverbs are like adjectives, as in certain German phrases. The syntax adheres to a strict order, which is: first the subject (nominative), then the object, attributes, the verb, and the conjunction last. Many of the simple words abound in significations, which must be discriminated by sinograms. Compounds and derivatives are as frequent and easy as in Greek or German. Examples of the former are: *kara-mi*, Lat. *corporis truncus; kono-mi, arboris fructus; futa-no, telæ paginæ; tsi-siro, pectoris liquor* (blood); *yamabato*, mountain bird, wild pigeon. Derivatives from *stat*, under, below, inferior, are: *statva*, humility; *statno*, humble; *statni*, humbly; *stat-nisheru*, to humble; *stat-ninaru*, to be humbled; *stat-vonarsu*, to cause humiliation, etc. Other derivatives are: *yomo*, to read, *yomi*, reading, *yomite*, reader; *itamo*, to afflict, *itami*, affliction; *orano*, to hate, *orani*, hatred; *kako*, to write, *kakite*, writer, etc. The following are paraphrases for avoiding ambiguity: *fai-tori-gumo*, fly-catch-spider, for *kumo*, which means cloud as well as spider; *ine-kari-gama*, rye-cut-scythe, for *kama*, scythe, frog, dish, etc. Many synonyms need explanation, as given in lexicons, where they are determined by sinograms, as for instance *ka-yari-bi*, fire-drive-gnats, because each of the three words has different meanings; *kami-fusuma*, a paper cloak, because *kami* signifies paper, god, head, above; *kino-doku*, mind-poison, grief; *ine-bikari*, rye-splendor, lightning; *issun-bōsi*, one-inch-bonze, for dwarf, etc. The following are examples of plurisignificants: *in-yen*, cause, banquet; *idziu*, to inhabit, to leave the house; *kauten*, heat and cold (so in Latin, *altus*, high and deep, *calidus* and *gelidus*, Eng. *coal* and *cool*,

etc.). Many Yomi and Koye coincide, others diverge altogether in signification; thus: *kiba*, Japanese, tool, Chinese, cavalry; *kido*, Japanese, city-gate, Chinese, joy, anger, etc. The adoption of Roman script of the English alphabet as a substitute for her ancient system of ideography, is one of the most remarkable and not least important of all Japan's steps toward harmonizing herself with the highest civilization of Europe and America. For several years a knowledge of Roman script has been increasing in Japan among the most highly educated. Now it is proposed by the most influential educational organization in the empire to make the teaching of our alphabet and of our mode of word formation compulsory and universal in the public schools. It seems probable that the government will adopt the proposal, in which case, of course, all private schools will have to do the same, with the result that all the children of Japan will be learning to write and read their own language in English fashion.

The literature of Japan comprises works of all kinds, histories, geographical and other scientific treatises, books on national history, voyages and travels, moral philosophy, dramas, romances, poems, dictionaries, and cyclopædias. A collection of the works of their poets, accompanied by short memoirs, has been made, and almost every Japanese is familiar with the best passages of the principal poets, and fond of quoting them in conversation. Many of their novels are of an interesting character and exhibit a higher imagination and more truth to nature than is found in the fictions of other Oriental nations. Their dramas, of which the people are passionately fond, are generally founded on national history or tradition, or the exploits, lives, and adventures of Japanese heroes and gods. Some of them are designed to illustrate and enforce moral precepts. Their general tendency is of an elevating, patriotic, and decorous nature, though some are strongly tainted with the national passion for revenge, and have horrible exhibitions of cruel punishments. The unities are totally disregarded, and the scene shifts from country to country and flies over great spaces of time without much regard to probability. Only two actors are usually upon the stage at the same time, and the female parts are performed by boys, as was formerly the case in Europe. The actor is most esteemed who can most frequently change parts in the same piece, and the leading actors receive very high pay.

*Art.*—Japan is in every sense an artistic nation. Owing to the timber construction that prevails in the buildings, which are marked by the characteristics of braced uprights, the overhanging curved roof, and an absence of arches, the architecture of Japan presents no very striking features except in the wealth of ornamental detail and brilliant color. The most imposing architec-

tural monuments are various temples of which two of the earliest and finest are the 7th century hondo or chief temple of Horinji, Yamato, and the pagoda of Yakushiji, near Nara. In sculpture and carving, however, their work is fine almost to microscopic detail, while still preserving the big effect. Their statuary, dating from the 8th century, is marked by a vigor and freedom of design which has resulted in a standard of high artistic merit. In their bronze statuettes and in carving in wood and ivory they are unsurpassed. The artists love to represent Japanese life as it exists, and the incidents of every-day life, more especially the comical and grotesque, are worked out in wood with extraordinary skill. But it is by painting, especially, that Japanese art is best exemplified.

In Japan the art of painting is of such ancient date that its origin is enshrouded in the mists of antiquity. China, India, Korea, and Persia exercised a notable influence upon early Japanese art, but its history cannot be traced back farther than the 9th century.

In the Japanese dwelling there are no pictures according to the conventional acceptation of the term, in their place is the kakemono, a gay and pleasing mural hanging, consisting of a strip of silk, satin, or crêpe, painted in a bold design of flowers, birds, or figures. This silk, often of thin or transparent texture, is sized in such a manner that it becomes an excellent vehicle for the retention of transparent washes in India-ink or water-colors.

The kakemono is invariably assigned to the place of honor in a home, and is hung in a receptacle known as the tokonoma. This is a hooded and partitioned recess made of bamboo or some light wood, built at right angles with the wall of the room, and so constructed that it always commands a good light. These panel pictures are changed as often as three times a week, changes being governed by the season, occasion, or rank of company expected. The kakemono is a favorite adornment for the tea-house, the gayest ones being selected for this purpose.

Some of the finest ancient examples are enshrined in sacred temples, many of them being representations of Buddha and the numerous pagan gods worshipped by the Japanese; others are emblematical, consist of holy symbols, and are bordered with the most expensive fabrics.

Kosé Kanaoka is said to be the father of Japanese painting; he was the painter and poet-laureate of the imperial court and is regarded as the most eminent artist of antiquity. But few of his works are extant, and they are treasured with such veneration that they are dedicated to the sacred shrines.

Up to the beginning of the 17th century the Japanese painters disdained to reproduce any but heroic and

religious subjects. It was not until the 18th century that any paintings portrayed the every-day life of the common people. Four artists soon became celebrated as prominent exponents of this new school of art. Iouasa Matahei was the founder of it, and has presented to posterity the pictorial history of the common people. He shows the peasant laboring in the field, the shopkeeper vending his wares, the artisan plying his various vocations, and the courtesan with her painted cheeks and gorgeous raiment. Hence the kakemonos of Matahei are of inestimable worth to the antiquarian, as they depict with admirable fidelity the manners and costumes of old times.

Motonobou was another able exponent of the realistic school; he began life as an art-embroiderer, and the embellishment of textile fabrics with fine needlework was due to his influence. It was he who created the fashion of the sumptuous trained robe still worn by the women of Japan.

Katsou-Kava was also a realist or impressionist. He devoted his talents to painting scenes from the theatre, and also pictures of women engaged in various occupations, with a smiling landscape or a sumptuous interior for a back-ground. These paintings of picturesque peasant girls, these counterfeit presentments of gaudily apparelled actors, are mostly to be found decorating the walls of tea-houses. Katsou-Kava was an able exponent of this school of art, which had many followers; he revelled in brilliancy of color, and under his skilful fingers the saffron yellows, the turquoise blues, and the rich violets were blended into a harmonious ensemble with consummate skill; his figures seemed imbued with life and motion.

Yeisai was one of the most delicious colorists of the latter-day impressionistic school, and is responsible for originating the exaggerated type of female who soon became the fashion in the cities of Japan. Although these exaggerations shock our refined tastes, we cannot fail to admire the voluptuous grace of his women, clad in the sumptuous stuffs that the looms of the Orient alone can produce. Another painter fond of portraying females of the refined aristocratic type was Outamaro, whose women are imbued with a languid sensuous charm. His paintings greatly resemble those of the modern French school, and remind one of a mellow rhythmical harmony in music.

Hakousai is undoubtedly the greatest painter, from a European standpoint, that Japan has ever produced, and may justly be compared with the most distinguished painters of Europe. His works are a veritable encyclopædia of dress and customs, but he was pre-eminently the artist of the people, and died unrecognized by the aristocratic classes.

*Music.*—Native music is almost identical with that

of China, having the same scale of five tones with an invariable common time. Marked by monotonous melodies chiefly in a minor key, and by an excessive use of chromatics, it is generally disagreeable to occidental ears. The use of the samsie or native guitar is an invariable part of female education. Old standards, however, are being abandoned, and western music introduced into schools and colleges is gradually gaining ground.

*History.*—The history of Japan commences with the reign of Sin Mu, who was at the same time high priest and emperor, about 660 B.C. He is said to have civilized the people, and to have established laws and a settled government. For many centuries his posterity reigned on the throne he had founded, bearing the title of mikado, and claiming to rule by divine right and inheritance. They were worshipped as gods upon earth, and long exercised the most absolute power. Women were not excluded from the succession, and in ancient Japanese history there are many famous empresses. The most celebrated of these was the Empress Singokogu, who began her reign in the 3d century of the Christian era. She conquered Korea, and gave birth to a son who succeeded her. He was so successful and renowned that at his death he was deified, and is now the Japanese god of war. In this early period a free intercourse appears to have been carried on with China, from which country about the middle of the 6th century Buddhism entered Japan, and was extensively spread among the people. Toward the end of the 7th century the claims of two brothers to the throne led to a great civil war, which was ended by the defeat and suicide of the younger. About the end of the 8th century a foreign people of whom nothing more is known than that they were not Chinese, but natives of some more distant country, invaded Japan, and being constantly reenforced from home, maintained hostilities for 18 years before they were entirely expelled. Between the 9th and 12th centuries several new religious were introduced by foreign priests or by Japanese returning from foreign countries. The reign of the emperor Itsi Sio (987–1012) was remarkable for a great epidemic over the whole country, and for the number of learned men who adorned the court. In the reign of Go Rei Sen (1046–69) a great rebellion took place in the province of Osju, which lasted for five years, and is much celebrated in Japanese literature. Another famous rebellion was headed by Kyomori, a prince of the blood, in the reign of To Ba (1108–24). About the middle of the 12th century, during the reign of the Emperor Kon Yei, the authority of the mikado began to decline. The vassal princes took advantage of the weakness of the imperial government to strengthen their own power, and great confusion ensued. To remedy these evils, the court of the mikado created the office of shogun or commander-in-chief of the army, and ap-

pointed to the post Yoritomo, one of the most celebrated characters in Japanese history. He was a young soldier of high birth, related to the imperial family, and was successful and ambitious, so that after quelling the turbulence of the great vassals and restoring the authority of the crown, he contrived to concentrate in his own hands the real power of the government, without, however, depriving the mikado of his nominal rank, dignity, and religious supremacy. The office of shogun was made hereditary in the family of Yoritomo, whose descendants became in fact joint emperors with the mikado. The Mongols having invaded China in 1260 and conquered the greater part of it, their leader Kublai Khan sent envoys to Japan in 1268, and again in 1271 and 1273, summoning the Japanese government to enter into an alliance with him. The Japanese dismissed the envoys without any answer. The Mongol conqueror, irritated at their insulting indifference to his proposals, sent against them a great fleet and army in 1274, or according to Marco Polo in 1264. This expedition landed in Japan, but was defeated and the army cut to pieces. A still greater expedition was despatched in 1281, and met a similar end, the Japanese sparing only three of the invaders to carry back to China the news of the fate of the rest. Japan from that time to the present has not been molested by invaders. In the 16th century civil wars broke out, and a revolution took place, by which Faxiba, a man of extraordinary ability and energy, originally a private soldier, was raised to the supreme command, and became shogun, under the name of Taiko Sama or Lord Taiko, with the additional title of tycoon. He was the first secular monarch who assumed entirely the absolute control of the empire, some share in the government having been hitherto granted to the mikado, who was now reduced to the condition of a merely nominal monarch. Taiko Sama is regarded by the Japanese as the greatest character in their history, at least since the mythical period, and was eminent not only as a warrior and statesman, but as a legislator. His law and policy until modern times were observed by the government of Japan, and secured to the nation an almost unequaled permanence of peace and prosperity. The turbulence of the vassal princes, who were then only 60 in number, and were individually powerful, was the chief source of the troubles that had afflicted the empire, and Taiko Sama took the decisive step of reducing their forces by dividing each principality into several. This policy, steadfastly carried out by him and his successors, resulted in establishing 604 distinct principalities and lordships, none of which was of sufficient magnitude to be formidable to the imperial power. It was during the confusion that preceded the rise of Taiko Sama that the Europeans began to be connected with the affairs of Japan. The existence of that empire was first made

known to Europeans by Marco Polo, who in his narrative, written about 1298, mentions it under the name of Zipangu, a modification of the Shipen-kue of the Chinese, from whom he had obtained his information. The Portuguese, after Vasco da Gama had doubled the cape of Good Hope in 1497, rapidly extended their discoveries and conquests in southern Asia. In 1542, three Portuguese sailors, who had deserted their ship and taken possession of a Chinese junk, were driven by storms upon the coast of Japan, and to them is ascribed its European discovery. About three years later a Portuguese adventurer, Fernam Mendez Pinto, while cruising with some companions of his own nation in the vesel of a Chinese pirate, was driven by foul weather into a harbor in one of the smaller Japan islands. He was well received, and carried back to the Portuguese settlements in China such a report of the riches and magnificence of Japan that great numbers of traders and adventurers flocked thither, and an active commerce soon sprang up. Missionaries speedily followed the merchants, and in 1549 Japan was visited by the celebrated 'Apostle of the Indies,' St. Francis Xavier. Both merchants and missionaries were favorably received. Tempted by the success of the Portuguese, the Dutch East India company in 1598 despatched five merchant vessels to Japan, one of which reached it in 1600. In 1609 other Dutch ships arrived, and were well received by the Japanese, who conceded to them the port of Firando for a factory or settlement, with considerable privileges. Before the arrival of the Dutch, who were then at war with Portugal, the Japanese government had become distrustful of the Portuguese, whose astonishing success made them haughty and disdainful of the feelings and prejudices of the natives. In 1587 Taiko issued an edict for the banishment of the missionaries; the edict was renewed by his successor in 1596, and in 1597 23 priests were put to death in one day at Nagasaki. The Christians on their part took no measures to pacify the government, but defied it, and began to overthrow idols and pull down heathen temples. This led to dreadful persecutions in 1612 and 1614 when many of the Japanese converts were put to death, their churches and schools destroyed, and their faith declared infamous and rebellious. The Portuguese traders were no longer allowed free access to the country, but were confined to the island of Desima at Nagasaki. In 1622 a frightful massacre of native Christians took place in the neighborhood of Nagasaki, and horrible tortures endured with heroic constancy were inflicted on multitudes in the vain effort to make them recant. In 1637 it was discovered by the Japanese government that the native Christians, driven to despair by persecution, had entered into a conspiracy with the Portuguese and Spaniards to overthrow the imperial throne. The persecutions were

renewed with increased rigor. Edicts were issued banishing the Portuguese forever from Japan, and prohibiting any Japanese, or any Japanese ship or boat, from quitting the country under the severest penalties. By the close of 1639 the Portuguese were entirely expelled, and their trade transferred to the Dutch, who, as enemies to the Portuguese and to the Roman Catholic faith, were not involved by the Japanese in their condemnation. In 1640 the oppressed native Christians rose in open rebellion in the province of Simabara. They seized a fortified place, made a long and gallant stand against the imperial troops, and were at length subdued only by the artillery and military science of the Dutch, who were either persuaded or compelled by the Japanese to cooperate against the rebels. The Christian stronghold was finally carried by storm, and all within its walls, men, women, and children, to the number of many thousands, put to death. In the next year the Dutch were ordered to quit their factory at Firando, and take up their residence, under very rigid inspection, in the island of Desima at Nagasaki. There they remained for more than two centuries in undisturbed monopoly of the entire European trade of Japan, notwithstanding occasional efforts of the Russians and English to obtain intercourse with the secluded empire. These efforts were resolutely repulsed, and led in one case to the imprisonment for two years in Japan of the Russian Captain Golownin and several of his companions. In 1852 the United States government, in consequence of complaints made to it that American seamen wrecked on the coast of Japan had been harshly treated by the authorities of that country, despatched an expedition under the command of Commodore M. C. Perry, who was instructed to demand protection for American seamen and ships wrecked on the coast, and to negotiate if possible a treaty by which American vessels should be allowed to enter one or more ports to obtain supplies and for purposes of trade. In February 1854, Commodore Perry, with a squadron of seven ships of war, entered the bay of Yeddo and came to anchor within a few miles of that capital. During the previous year he had entered the same bay and delivered to the Japanese a letter to the emperor from the President of the United States. On 1854, March 31, after much difficult negotiation, a treaty was agreed upon, dated at Kanagawa, the nearest large town, though really signed at the village of Yokohama. By this treaty the ports of Simoda and Hakodadi were appointed for the reception of American ships, where they can be supplied with wood, water, provision, coal, and other requisite articles, and protection and assistance were guaranteed to shipwrecked seamen. Liberty to trade under certain restrictions was also granted, and an arrangement made for the residence of American consuls at Simoda and Hakodadi.

## JAPAN.

In September 1854, a British squadron commanded by Rear-Admiral Sir James Stirling entered the harbor of Nagasaki, and a treaty was soon concluded between Great Britain and Japan, by which Nagasaki and Hakodadi were opened to foreign commerce. Subsequently the Russians made a similar treaty and obtained equal privileges; and by a treaty dated 1855, Nov. 9, the Dutch in Japan were relieved from most of the restrictions so long imposed upon them at Desima. On 1857, June 17, a new treaty was negotiated at Simoda with the Japanese government on behalf of the United States by Mr. Townsend Harris, United States consul-general for Japan, by which the port of Nagasaki, in addition to those of Simoda and Hakodadi, was opened to American trade, and additional privileges granted to American merchants. In 1858 Mr. Harris succeeded in reaching Yeddo, where he concluded a still more favorable treaty. In the same year a British squadron conveyed a British ambassador, the earl of Elgin, to Yeddo, where, on August 26, a new treaty was concluded between Great Britain and Japan, by which the ports of Hakodadi, Kanagawa, and Nagasaki were opened to British subjects after 1859, July 1, Nee-e-gata or some other convenient port on the west coast of Niphon after 1860, Jan. 1, and Hiogo after 1863, Jan. 1, and various commercial privileges granted to British merchants. In 1860 a Japanese embassy visited the United States, and in 1861 an embassy was sent to the European courts. The rebellion of 1868 followed on the deposition of the shogun, and the reform movement for modernizing Japanese institutions was organized by Iwakura, Okulo, Saigo, and Kido. The youth of Japan was sent to Europe for the purpose of acquiring western sciences, and foreign advisers were engaged to reorganize the army and to instruct the nation in the ways of the West. The first innovation was the construction of a railway in 1869, and since that date an immense railway system has been developed. The building up of a powerful and efficient navy was begun, a mercantile fleet organized and dockyards and arsenals established. The problem of education received the early attention of Japanese reformers. Commissioners were despatched to Europe in 1871 charged with the task of mastering the essential points of Western education. On their report an educational code, which has since been frequently revised, was drawn up. The new conditions of life necessitated the abolition of Japan's traditional code of laws, which she proceeded to replace. These reforms were not effected without considerable opposition and several risings of the nobles, who, in consequence of the revolution of 1868, were deprived of their privileges, and to a large extent of their incomes, took place. That of 1876–7, headed by the reformer Saigo, taxed the resources of the government pretty severely before it was quelled.

## JAPAN.

The period from 1890 is marked by the actual working of constitutional government and the rise of parliamentary parties, and the appearance of Japan as a war power among the great powers of the world. The first parliamentary diet was opened in 1890, but was dissolved in 1891 because of factious opposition to the budget. Like opposition compelled in 1893 the dissolution of the second diet for radical criticism of the govt. concessions to foreign demands, and the third diet likewise in 1894. In these cases Count Ito was vigorously pushing treaty revision, but was hampered by the jingo policy which seemed to endanger the permanency of the govt. He succeeded, however, in forming an alliance with the Liberals and their leader, Count Itagaki, who recognized the patriotic wisdom of Ito. This alliance, though not permanent was a distinct advance in constitutional government, and the war with China in 1894 rallied all parties to the support of the govt.

The Japanese had obtained from Korea, in 1876, a treaty declaring that country independent of China, which China allowed to pass to avoid responsibility for Korea's acts; and when in 1884 an insurrection in Seoul threatened the Japanese representative, Japan sent troops directly to his support. China had sent troops also, two years before, and Aug. 1 the Mikado declared war against China. On Aug. 26 he made an alliance with Korea against China; and Sept. 16, at Ping Yang, capital of the northwest province of Korea, a severe engagement resulted in the rout of the Chinese, and a few days later a naval battle off the mouth of the Yalu gave the Japanese full control of the adjacent waters. The Yalu is the boundary between Korea and China, and the Chinese forces on that river were swept aside Oct. 26 by the Japanese, who then began their advance through Manchuria as if towards Peking.

This advance was under the command of Marshal Yamagata, and Nov. 3 Port Arthur was invested by land and sea, and Nov. 21, after hard fighting, was taken. Measures of radical reform were proposed, and on their rejection the Japanese attacked the palace, and held the king as a hostage. Prince Kang admitted the helplessness of China, and appealed to all the Powers for intervention.

The Japanese were accused of great barbarity at Port Arthur, but advanced against slight opposition and Dec. 19 won the severe battle of Kungwasai, and the battle of Kai-phing, 1895, Jan. 10, and Jan. 26 assailed the stronghold of Wei-hai-wei, which surrendered with the Chinese fleet in its harbor. On Feb. 12 the Chinese general and admiral both committed suicide.

The Chinese government then made overtures of peace, and sent Li Hung Chang to Japan. He was assaulted by a Japanese ruffian, and seriously, but not dangerously wounded. The mikado ordered an armistice, and a treaty of peace was signed at Shimonoseki, 1895, April 17.

This treaty of Shimonoseki declared the independence of Korea, ceded by China to Japan a great stretch of territory with ports and fortifications, as well as Formosa and certain other islands, and the payment by China of an indemnity of 200,000,000 taels.

Russia, Germany and France protested against the cession of territory on the main land, and Japan was compelled to relinquish that result of her victory, which was done by Imperial proclamation, 1895, May 10. The submission of the Japanese government to this pressure from the great European powers was exceedingly unpopular in Japan, and Marquis Ito was obliged to retire from his office in 1896, and was succeeded by Count Matsukata in Sept. of that year. During this year a terrible tidal wave overwhelmed a long stretch of the northern coast of Japan and destroyed several considerable towns, with a loss of 30,000 lives.

A new tariff was adopted in 1897, March; in October the gold standard of money was proclaimed; and in November a treaty was concluded with the United States and Russia to suspend pelagic sealing. A subject which constantly occupied the attention of Japanese statesmen during the 12 years that preceded the war with China was treaty revision. Japan had sacrificed national pride in order to place herself upon an equality with the West, her progress had been serious and genuine, and her statesmen protested against the continuation of extra-territorial privileges which relegated the country to the level of barbarous and uncivilized states. Great Britain was the first power to acknowledge Japan's claims to equality, and in 1894, July, a new treaty, which was not to take effect for five years, was concluded by the two governments. Other powers followed suit, and in 1899, July 17, Japan attained her international majority. The principal effect of treaty revision was to abolish extraterritoriality, and to throw open the whole of Japan to foreigners for purposes of travel, trade or residence.

The success of Russia against Japan in the settlement of the results of the Korean war, gave the former country predominance, and resulted in a revolutionary conspiracy in Seoul in 1895, Oct., in which the Queen of Korea was one of the victims of a murderous assault by assassins who were dressed in Japanese costume. The Japanese government repudiated the crime and arrested its minister, who was suspected of complicity; but Russian influence obtained control of the king, and secured a protectorate over Korea, in which Japan, though nominally one of the protectors, was practically expelled. Late in 1897 the Russian minister in Korea secured the dismissal of the English financial adviser of Korea, and its commissioner of customs, and put a Russian in his place.

In 1898 Russia and Japan agreed in a protocol signed

at Tokio, April 25, that both governments respect the complete independence of Korea; that when Korea asked advice or help, neither nation should respond without consultation with the other; and that Russia would in no way hinder the growth of commercial relations between Korea and Japan. The same year China leased Port Arthur to Russia for ninety-nine years, and Great Britain took possession of Wei-Hai-Wei, to maintain her own influence in Eastern waters, and though China this year paid to Japan the remainder of her war indemnity, there was strong feeling in the latter country that her government had submitted to an unjust exclusion from the mainland, and June 27 the cabinet under Marquis Ito felt constrained to resign.

In the disturbances in China in 1900 from the Boxer insurrection the chancellor of the Japanese embassy at Peking was one of the earliest victims; and when the European and American allies collected an army to open way to Peking and relieve the legations imprisoned in that city, Japan was among the foremost of the allies, not only sending a full contingent of troops, but by their forwardness in the advance, their bravery under fire, and their absolute discipline and humane self-control, standing in the highest position, winning praise of all.

The close of the Boxer disturbances called for the general fulfilment by the allies of their promise to one another and to the world to evacuate China when order should be restored; but it became evident that this would not be done at all. On 1902, Feb. 12, an alliance was announced between Japan and Great Britain to preserve the integrity of China and Korea. This treaty had been signed in London, 1902, Jan. 30, and stipulated that in case either of the contracting parties should become involved in war with more than one power, the other would be pledged to go to its aid. In April of the same year a convention was signed at Peking between China and Russia, in which the latter agreed to evacuate Manchuria, but as Russia showed no sign of keeping this promise, and had greatly strengthened herself at Port Arthur, and still more as she seemed getting a foothold in Korea, Japan protested to Korea, and threatened in 1903 to regard all Korea as open if the Russian designs were countenanced. In Aug. direct negotiations with Russia were opened.

In the course of the protracted negotiations Japan demanded of Russia a recognition of Japanese paramount interests in Korea and of the sovereignty of China in Manchuria, as Russia had failed to evacuate Manchurian territory within the stipulated time, and Russia expressed a willingness to concede Japan's demand as to Korea, but refused the Japanese contentions regarding Manchuria. Finally, alleging Russia's procrastination in answering her last note, Japan severed diplomatic relations, 1904, Feb. 6, and on the 8th and 9th attacked

the Russian fleets at Port Arthur and Chemulpo and began the occupation of Korea.

War ensued on the battlegrounds of Korea, Manchuria, and in the adjacent waters, until peace was re-established 1905, Sept. 5, Japan strengthening her position by a new treaty of alliance with Great Britain. See KOREA; MANCHURIA; PORTSMOUTH, TREATY OF; RUSSIA; KUROPATKIN; KOMURA; ROJESTVENSKY; RUSSO-JAPANESE WAR; TOGO; WITTE; etc. After the Russo-Japanese War relations with Korea became strained and Marquis Ito (q.v.) was twice dispatched there, his visits resulting in the Japan-Korea treaty of November, 1905, declaring the Japanese protectorate over the peninsula. Subsequently Ito was appointed Resident-General in Korea and the Korean emperor in 1907 was forced to abdicate. In 1906 and 1907 several disturbances occurred in San Francisco, Cal., and in British Columbia, Canada, in the former place concerning the rights of Japanese subjects in the public schools, and in the latter concerning coolie immigration. These at the time of their occurrence were of some significance but were subsequently easily and satisfactorily settled.

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JAPANESE, n. *jăp'ăn-ēz:* a native of Japan, or the language. JAPAN CURRENT, that branch of the equatorial current of the Pacific which trends northward along the Japan coasts. JAPAN EARTH: see under TERRA.

JAPAN'NING: art of giving a coating of varnish and other materials to certain manufactures, by which a resemblance is produced to the beautiful lacquered wares of Japan and China. The term is generally

applied in this country to metal-works upon which a dark-colored varnish is applied with heat. The process is extensively applied to papier-mâché works: See LACQUERING. The japanned works of our manufactures are chiefly iron and tin, such as coal boxes, tin canisters and other articles, which are thereby made more ornamental, and are at the same time protected from rust.

The japanning material consists of anime or copal varnish, alone, or mixed with ivory-black, to produce a black japan; or with asphalt, to produce a dark or light brown, according to the quantity used. For very cheap tinned wares, a single coating is all that is usually given. After being varnished, they are put into a heated oven for a time, after which they are ready for use; but in the case of more valuable articles, such as the handsome coal boxes of iron now extensively manufactured, and still further ornamented by gilding and painting, several coats of black japan varnish are applied, each being dried in the oven previous to the application of the next, so that a coating of sufficient substance to bear polishing is obtained. Rottenstone and Tripoli powder are used by the polisher, and a beautiful surface is obtained, equal to that of polished jet. The polishing powders are at first applied with leather; but the finishing is done by women, who use only the palms of their hands with small quantities of Tripoli.

The beautiful black surface thus produced is admirably adapted for decoration by gilding, in which much taste is now shown especially by English manufacturers. For the Japanese process, thus imitated on metal under the name of japanning, see LACQUERING.

JAPHETH, *jā'fĕth*, or JAPHET, *jā'fĕt* [Heb. *Yepheth*, apparently derived in Genesis from *pathah*, to 'open,' trop. perhaps 'to stretch forth,' hence supposed to mean 'widely dispersed.' Gesenius and other scholars, however, suggest a derivation from *yaphah*, 'to be fair' or 'beautiful,' in allusion to the fair complexions of the Japhetic or European races]: according to the Hebrew record, second (or as some interpreters say, third) son of Noah, whose descendants peopled first the n. and w. of Asia, after which they occupied 'the isles of the Gentiles,' i. e., all the region about the Levant and the Ægean Sea. J. has at a later period, in Talmud and Midrash—not merely from its similarity to the Greek name Iapetus or Japetus, legendary founder of the human race—been used as a typical expression for 'Greek.' Cf. *Meg.* 71, *b.*; *Ber. R.* 40, *b.*

JAPHETIAN, a. *jă-fĕt'ĭ-ăn*, or JAPHETIC, a. *jă-fĕt'ĭk*: pertaining to the languages of the descendants of *Japheth*, the eldest son of Noah.

JAPP, ALEXANDER HAY, English editor and author:

b. Dun, Forfarshire, 1839, Dec. 25. He was educated at Edinburgh University, and was for several years sub-editor of *Good Words* and the *Contemporary Review* and editor of the *Sunday Magazine*. Several of his works have appeared over various pseudonyms—'H. A. Page,' 'Benjamin Orme,' and others. He wrote: a *Life of Thomas De Quincey* (1874); *Thoreau: his Life and Aims* (1878); *German Life and Literature* (1881); *De Quincey Memorials* (1885); *Cuckoos and other Parasitical Birds* (1899); *Darwin and Darwinism* (1900); *Darwin as Ethical Thinker* (1901); *Robert·Louis Stevenson* (1905); and other volumes.

JAPURA, *ċhâ-pô'râ*, or CAQUETA, *kâ-kā'tâ:* river of S. America, tributary of the Amazon. It rises in the Granadian Andes, lat. 1° 26′ n., long. 76° 50′ w., and joins the Amazon about 65° 50′ e. long. Its entire length is more than 1,000 m..; the navigation is impeded by cataracts.

JAPY'GIA, or IAPY'GIA. See APULIA.

JAR, n. *jâr* [OF. *jare;* F. *jarre*—from Sp. *jarra;* It. *giara,* a jar—from Ar. *garrah,* a waterpot]: an earthenware pot or vessel of variable shape and dimensions.

JAR, n. *jâr* [Swab. *garren;* Bav. *garrezen,* to creak like a wheel or shoe: Sp. *chirriar,* to creak; L. *garrīrĕ,* to chirp, to chatter: comp. Gael. *dear = jâr,* a refusal]: a harsh rattling vibration of sound; harsh vibration or sensation; a quarrel; a clash of interests or opinions: V. to strike or shake with a short rattle; to sound untunably; to strike or sound harshly or discordantly; to clash; to interfere; to quarrel or dispute. JAR'RING, imp.: ADJ. conflicting; disputing: N. a quarrel; a dispute. JARRED, pp. *jârd.* JAR'RINGLY, ad. *-lĭ.* AJAR, ad. *ă-jâr',* applied to the state of a door slightly open, when it is capable of producing the jarring sound; open but a little, said of a door.

JAR, LEYDEN. See ELECTRO-STATICS.

JAR'CHI. See RASHI.

JARDES, n. *jârdz* [F. *jardons*]: in *far.,* hard callous tumors in horses, a little below the bending of the ham on the outside.

JARDINIÈRE, n. *zhâr-dĭn'ĭ-ār* [F. a gardener's wife]: an ornamental stand for plants and flowers, used as a piece of decorative furniture in a room.

JARGON, n. *jâr'gŏn,* or JARGOON, n. *-gôn':* a mineral, being a Cingalese variety of zircon, colorless specimens of which are often sold for diamonds.

JARGON, n. *jâr'gŏn* [F. *jargon,* gibberish; It. *gergone;* F. *jargonner,* to talk gibberish]: confused, unintelligible talk; gabble; a disparaging term applied to rude and harsh language; applied to the peculiar phraseology of a party. *Note.*—JARGON may be connected with Gael. *iarr,* to beg, *cainnt,* speech—thus denoting the canting, dron-

ing language of beggars. JARGONIZING, *jâr-gŏn-īz′ĭng*, phenomena observed chiefly in acute mania; it consists in the utterance of uncouth and unintelligible sounds, which may resemble articulate words, or be little more than harsh ejaculations and bellowings. This symptom must not be confounded with those imitations of foreign tongues or provincial idioms, or the perversions of the faculty of language characteristic of mania and other forms of alienation, as the sounds in Jargonizing are not intended to be, nor to appear, the vehicles of thought or manifestations of feeling. They stand in the same relation to the excitement and violence, as the rapid motion, the furious gesticulation, and the tendency to injure and destroy everything that is seemly and harmonious. The tone in which they are uttered is generally harsh and defiant, because intense passion thrills through every muscle, through those of the vocal apparatus as well as of the arm raised to strike. Jargonizing is, in all probability, involuntary. It occurs at the commencement or crisis of mania, when the power to control the ideas and to regulate motion is most impaired. It may, however, be the result of volition, so far as that the individual desires and determines to speak, but fails from the rapidity or intensity of his emotions to call into action, and co-ordinate the organs engaged in articulation. Such utterances may be heard in soliloquy, if the phrase may be used, and during sleep. The feature has been accepted as pathognomic of mania. It has, however, been noticed in the delirium of certain stages depending upon blood-poisons. During periods of profound abstraction, similar sounds are said to have proceeded from the lips of sane and healthy men. In all these instances the natural operation of the will appears to be enfeebled or suspended.

JARGONELLE, n. *jâr′gŏn-ĕl* [F. *jargonnelle*—from *jargon*, a yellow diamond, a small stone]: a rich variety of pear very stony.

JARNAC, *zhâr-nâk′*, BATTLE OF: at the town of Jarnac, dept. of Charente, France, 1569, Mar. 13, between 20,000 Rom. Catholics under the Duke of Anjou, afterward Henri III., and 15,000 Huguenots under Louis, Prince of Condé, together with Coligny. The latter were completely routed. See CONDÉ.

JAROSLAV, *yâ′rō-slâv:* capital of the govt. of Jaroslav, in European Russia; on the right banks of the Volga, and its affluent the Kotorosl; lat. 57° 37′ n., long. 39° 53′ e.; 164 m. from Moscow. It is one of the most ancient Russian towns, and is said to have been founded by Jaroslaw the Great, 10th century. During the feudal period, it was the seat of powerful feudal princes, and several times suffered from the invasions of the Mongols. The town has a vast *gostinoidvor*, or market-place, nearly as lively as that of Moscow, and a quay on the Volga,

about 2 m. long. Though possessing large stores of linen fabrics, flax, iron, flour, and grain, Jarosav is but a second-rate commercial place on the Volga, the principal trade being concentrated at Rybinsk, 54 miles up the river, and at Rostof. Chemical works, principally of white lead and minium, constitute a sort of specialty of the town and its staple industry; next come several tanneries, extensive flour-mills on the Kotorosl, and a recently built cotton-mill of 40,000 spindles. The celebrated silk, and especially linen and damask factories, are at present on the decline. The population of Jaroslav is increasing with the wealth of the town, owing to the development of steam-navigation on the Volga and the Kama. Jaroslav has a law college, founded 1805. Pop. 70,000.

JARROW-, *jăr'rō* (or YARROW-, *yăr'rō*) ON-TYNE, *-ŏn-tīn:* town of Durham, England, on the s. bank of the Tyne river, 7 m. s.e. of Newcastle, 240 m. n.n.w. of London. It has extensive ship-building yards, iron foundries, and manufactories of paper and chemicals, and in its immediate neighborhood are several great coal mines. The parish church of St. Paul retains some fragments of the Saxon edifice founded about 685, and is said to contain the oak chair and relics of the Venerable Bede (q.v.). Ruins of the monastery begun by Biscop 681 and consecrated 685 are found close by. Other buildings of note are the various chapels, mechanics' institute, and the hospital. Jarrow was a local board district prior to 1875, and was then constituted a municipal borough. Pop. (1901) 34,294.

JARVES, *jâr'vés*, JAMES JACKSON: 1818, Aug. 20—1888, June 28; b. Boston: author. A weakness of the eyes prevented his entering Harvard College, for which he had prepared, and led him to extensive foreign travel. After visiting Cal., Mexico, Central America, S. America, and various Pacific islands, he setted in Honolulu 1838, established *The Polynesian*, the first newspaper published in Hawaii, 1840; was made director of the govt. press and his newspaper the official organ of the government 1844; was appointed special commissioner of Hawaii to negotiate treaties with the United States, France, and Great Britain, 1849; and after concluding this business, made his residence alternately in Rome and Florence, and began forming a gallery of old masters illustrating the history of Italian art. He was elected honorary member of the *Acad. delle Belle Arti* in Florence, was U. S. vice-consul and acting consul in Florence 1879–82, and commissioner of Italy for the Boston exhibition 1882–3. His collection of old masters became the prop. of Yale Univ., a second of old masters and antique sculpture went to the Holenden gallery in Cleveland, and his collection of antique and modern Venetian glass was given by him to the Metropolitan Museum of Art, New York. His numerous publications include *A History of the*

*Hawaiian or Sandwich Islands* (1843); *Scenes and Scenery in the Sandwich Islands* (1844); *Parisian Sights and French Principles seen through American Spectacles*, 2 vols. (1853); *Art Hints, Architecture, Sculpture, and Painting* (1855); *Kiana, a Tradition of Hawaii* (1855); *Italian Sights and Papal Principles seen through American Spectacles* (1855); *Confessions of an Inquirer*, 3 parts (1857–69); *Art Studies: The Old Masters of Italy* (1861); *The Art Idea, Sculpture, Architecture, and Painting in America* (1866); *Art Thoughts: The Experiences and Observations of an American Amateur in Europe* (1869); *Glimpses at the Art of Japan* (1876); and *Italian Rambles* (1884).

JARVIS, *jär'vĭs*, Abraham. D.D.: 1739, May 5—1813, May 3; b. Norwalk, Conn.: bishop of the Prot. Episc. Church. He graduated at Yale College 1761, was ordained deacon and priest in London 1764, became rector of Christ Church, Middletown, Conn., the same year, declined a first election as bishop to succeed bishop Seabury 1796, accepted the second and was consecrated 1797, and was settled in New Haven from 1803 till death.

JARVIS, John Wesley: 1780–1840, Jan. 12; b. S. Shields, England: painter. He was named after his uncle the celebrated Methodist, was brought to Philadelphia by his father when 5 years old, educated himself, wanted to study painting but was discouraged by Stuart, removed to New York and became an engraver, and first exhibited his art talent in executing profiles on glass in black and gold leaf. From this he began painting miniatures, and afterward portraits in oil. He made a thorough study of anatomy, and after his fame was established painted with great rapidity and showed a genius for indicating the characteristic traits of his subjects. At different times he lived in New York, Baltimore, Richmond, Charleston, and New Orleans. He was a brilliant raconteur and exceedingly popular. Among his portraits are those of Hull, Perry, Bainbridge, Swift, Brown, McDonough (in the New York city hall), Randolph, Morris, Tompkins, Benson (in the New York Hist. Soc.), Clinton, Bp. Moore, and Fitz-Greene Halleck.

JASEY, n. *jā'zĭ* [corruption of *Jersey*, and probably so called from being made of or resembling Jersey yarn]: a wig; a head of bushy hair.

JASHER, *jā'shẽr*, Book of [Heb. *Sepher ha-yashar*, 'the Book of the Upright;' rendered by the LXX. *Biblion tou Euthous*, and by the Vulgate, *Liber Justorum;* but the Peshito (Syriac version) has *Sepher Hashir*, 'Book of Praises or Hymns']: one of the lost books of the ancient Hebrews; quoted in the Bible twice (Josh. x. 13 II. Sam. i. 18). Regarding its character and contents, there has been much speculation. Talmudic and later Jewish authorities identified it variously with Genesis (sometimes called 'the Book of the Upright'), Deuter-

onomy, Judges, etc., to all which notions there is the fatal and obvious objection that the two quotations from it which survive are not found in any of these books, and refer to incidents later in the national history. The conjecture of the Syriac and Arabic translators has been adopted by Lowth and other scholars, viz., that the book of Jasher was a collection of national ballads —a Hebrew minstrelsy, in short—recording the warlike deeds of the national heroes, or singing the praises of otherwise celebrated men. Gesenius is inclined to the same view, and suggests that it may have acquired its name, 'the Book of the Upright,' from having been written chiefly in praise of upright men. Donaldson, in an ingenious work, *Jasher, or Fragmenta Archetypi, Caminum Hebraicorum in Masorethico Veteris Testamenti Textu passim tessellata*, contends for its being a composition of the age of Solomon, and a work of Nathan and Gad. He conceives that it originated in the desire of the more religious of the community to possess a record of the national history which should chiefly set forth the righteousness of the true Hebrews, and he attempts to extract from the so-called canonical books of the Old Testament such passages as he believed to have originally formed part of it. It must be added, however, that Dr. Donaldson's theory has met with little favor either from the mass of German scholars or from the few in England who were competent to consider the question. Several pretended books of Jasher have been put forth. Three were written in Hebrew, and published, 1394, 1544, 1625. A fourth, purporting to be an English translation, was written by an infidel printer at Bristol, Eng., secretly printed, and published 1751.

JASMIN, *zhâs-măng'*, JACQUES: 1798, Mar. 6—1864, Oct. 4; b. Agen: most eminent modern patois poet of France, and in the words of his ardent admirers, 'the last of the troubadours.' He has given in his *Soubenis* a humorous account of his early life. According to it, he was of very humble birth, and was set to learn the trade of a hair-dresser, which agreed well with that of poet, as he himself says, because both are a kind of head-work. His poetry is full of beauty and power; the pathos of his serious, and the wit of his comic pieces, are unequalled, and both have been received with enthusiasm in France, and other parts of Europe. His most admired pieces all are written in the Agen patois, a picturesque and melodious dialect, spoken by the illiterate and rustic, which he partly remodelled as a literary medium. He used to recite his pieces in public. He was made a chevalier of the Legion of Honor 1846. Jasmin's principal works are *Mc cal Mouri* (1825); *Lou Chalibari* (The Charivari, 1825), a comic poem; *L'Abuglo de Castel-Cuille* (The Blind Youth of Castel-Cuille, 1836), translated by Longfellow; and *Las Papillotos de Jasmin*

(The curls of Jasmin), of which the first part appeared 1835, and the second 1843. He died at his native town.

JASMINE, n. *jăs'mĭn*, also spelled JESSAMINE, n. *jĕs'-să-mĭn* [F. *jasmin;* Sp. *jazmin*—from Ar. *yasmin*], (*Jasminum*): genus of plants of nat. ord. *Jasminaceæ*. This order is allied to *Oleaceæ*, and contains about 100 species of shrubs, some of them climbing, and many of them having exquisitely fragrant flowers. They are natives chiefly of warm parts of Asia. Many belong to the genus jasmine, which has its calyx and corolla each 5 or 8-cleft, two stamens attached to and included within the tube of the corolla, and a two-lobed berry, one of the lobes generally abortive. The COMMON *jasmine* (*J officinale*) is a native of s. Asia, but now naturalized in s. Europe, and as far n. as the Tyrol and Switzerland. In more northern regions, it is much cultivated in gardens, but does not easily endure severe winters. It is a shrub six to ten ft. high, with evergreen pinnate leaves, the terminal leaflet the largest, and very fragrant white flowers. The flowers were formerly employed in medicine, for strengthening the nervous system, but are now used only for preparing *Oil of Jasmine*, a delicious perfume. The commercial oil of jasmine, however, is not the pure essential oil, but merely oil of ben flavored with is, and is prepared by placing layers of the flowers alternately with layers of cotton soaked in oil of ben.—*J. grandiflorum*, native of the E. Indies, has flowers still more fragrant, from which, and from those of *J. Sambac* also, oil of jasmine is made. The flowers of *J. Sambac* are often scattered about in houses and temples in the E. Indies, to diffuse their fragrance: florists have several varieties of it.—Several other species, some with erect, some with twining stems, are common in gardens and green-houses: some have white and some have yellow flowers. A very fine species is *J. grandiflorum* or Catalonian jasmine (in Europe, Malabar J.), *J. nudiflorum* has yellow odorless flowers, which bloom only in spring: it is a hardy species. —Oil of jasmine cannot be obtained from jasmine flowers by distillation.

JAS'MINE, CAPE; or CAPE JES'SAMINE: tropical and subtropical shrub-plant of the genus *Gardenia*, family *Rubiaceæ*. It is neither related to the true jasmine nor a native of the Cape of Good Hope, the best known species, *Gardenia florida*, having been found originally in China, whence it was taken to England 1754. Under cultivation it yields large white and fragrant flowers, and oblong orange-colored berries, which the Chinese and Japanese use in making yellow silk dye. In England and the United States it is cultivated as a bedding-plant in hot-houses, and in some localities in the open air, and is popular for garden and cemetery ornamentation.

JAS'MINE, CAROLINA; or YELLOW JES'SAMINE. See GELSEMIUM.

JA'SON: in Greek legend, the son of Æson, king of Iolcos in Thessaly, a hero of ancient Greece, celebrated for his share in the Argonautic expedition, before which he had distinguished himself in the Calydonian hunt. He belonged to the family of Æolidæ at Iolcos, and his instructor was the centaur Chiron, who educated most of the heroes of that time. (For his adventures in the Argonautic expedition see ARGONAUTS.) On his return to Iolcos with Medea as his wife he avenged the murder of his parents and his brother by putting Pelias to death. But he was unable to retain possession of the throne, and was obliged to resign it to Acastus, son of Pelias, and flee with his wife to Corinth. Here they passed ten years, till Jason, wearied of Medea, fell in love with Glauce (Creusa, according to some accounts), daughter of Creon, king of Corinth, married her, and put away Medea and her children. Medea, having revenged herself on her hated rival, fled from the wrath of Jason in her car drawn by winged dragons, the gift of Helios, to Ægeus, king of Athens, after she had put to death Mermerus and Pheres, her sons by Jason. According to some, Jason killed himself from grief; but others relate that, after passing a miserable wandering life, he came to his death by accident. Others say that he was reconciled to Medea, and returned with her to Colchis, where he ruled many years.

JASP, n. *jăsp:* OE. for JASPER.

JASPER, n. *jăs'pėr* [OF. *jaspre;* F. *jaspe;* It. *jaspide* —from L. and Gr. *ĭăspĭs*]: mineral generally regarded as one of the varieties of Quartz (q.v.), and distinguished by its opacity, owing to a mixture of clay or other substances with the silica of which it is chiefly composed. There are many kinds of Jasper, some of them of one color, as brown, red, yellow, green, white, blue or black; some variously striped, spotted, or clouded with different colors. Jasper, though counted among precious stones, is a very abundant mineral; it is found in veins and embedded masses in many rocks, sometimes appears as a rock of which whole hills are formed, and is very common in the shape of pebbles. It has been prized from the most ancient times for ornamental purposes, as it takes a high polish. Many kinds of it are very beautiful; and it can often be obtained in pieces of large size, so that it has been much used not only for rings, seals, and other small articles, but for the decoration of palaces. One of the best known kinds of jasper is found in Egypt, *Egyptian Jasper:* it is generally yellow, prettily mixed with brown. Possibly the ancients classed as jasper some stones which now are called chalcedony and agate, while our jasper was known to them as *achates.* The original jasper appear to have been green.—Jasper with very distinct stripes is called *Ribbon Jasper.*—The kind called *Porcelain Jasper* is rather rare: it is often full

of minute holes, or is cracked in all directions, and is regarded as a kind of natural porcelain, formed by the action of fire. JASPID'EAN, a. *-pĭd'ē-ăn*, also JASPID'EOUS, a. *-ē-ŭs*, like jasper; consisting of jasper. JAS'PERY, a. *-pėr-ĭ*, having the character of jasper.

JASPER, *jăs'pėr*, WILLIAM: about 1750–1779, Oct. 9, b. S. C.: soldier. At the beginning of the Revolutionary war he enlisted in the 2d South Carolina regt., was soon afterward promoted sergt., and in the attack on Fort Moultrie by a British fleet 1776, June 28, distinguished himself by leaping out through an embrasure at the height of the bombardment, recovering the flag that had been shot from its staff, tying it to a sponge-staff, and standing with it on the ramparts until another staff was erected for it. Gov. Rutledge rewarded him for his heroism by presenting him with his own sword, and offered him a lieutenant's commission, which he declined through inability to read or write. He was employed on picket and outpost duty, made a number of daring raids into the enemy's country, and was mortally wounded while attempting to fasten the colors, presented by Mrs. Elliot to his regt., on the parapet of Spring Hill redoubt during D'Estaing and Lincoln's attack on that place in the assault on Savannah 1779, Oct. 9. A public square in Savannah and a co. in Ga. are named after him, and a monument commemorating his daring feat has been erected in Savannah.

JASSY, *yâs'sē*, or JASSII, or JASCHI: capital of Moldavia, the n. division of Rumania; picturesquely situated on the slope of the Kopoberg Mountains, near the borders of Bessarabia, about ten m. w. of the Pruth. It is irregularly built and dirty, and in its crooked streets the palatial mansion of the Bojar—the Moldavian noble—alternates with huts and hovels. It contains about 90 ecclesiastical edifices, one of which dates from the 14th c. On a height is the Prince's Court, formerly the residence of the governor of Moldavia. The streets are covered with dust in summer and with mud in winter, on which account, conveyances are in great requisition, and every one except the Jew and the mendicant employs a drosky. In Jassy there are 1,300 private carriages, 5,000 droskies, and 12,000 horses. The manufactures of the town are few; there is considerable trade in agriculture produce. Pop. (1900) 78,067, of whom many are Jews, Greeks, Armenians and Germans.

JASTROW, *jăs'trō*, JOSEPH, American psychologist: b. Warsaw, Poland, 1863, Jan. 30. He was a son of Rabbi Jastrow (q.v.) and came to America in childhood. He was graduated from the University of Pennsylvania in 1882 and has been since 1888 professor of psychology at the University of Wisconsin. He became president of the American Psychological Association in 1900. He has published *Time-Relations of Mental Phenomena* (1890);

*Epitomes of Three Sciences* (1890); *Fact and Fable in Psychology* (1900); *Modern Psychology, The Subconscious* (1906).

JASTROW, Marcus M., American rabbi and lexicographer: b. Rogasen, Posen, 1829; d. Germantown, Philadelphia, 1903, Oct. 13. After the usual rabbinic and academic studies he graduated from the University of Halle in 1854, became a barber in Berlin, and then rabbi at Warsaw. After five years he was obliged to leave by reason of his political opinions, after being subjected to arrest. He was called to the Congregation Rodef Sholen, Philadelphia, in 1866, with which he was connected until his death, within recent years as rabbi *emeritus*. Besides some monographs and contributions to the press, he is best known for his *Dictionary of the Targumim, the Talmud Babli and Yerushalmi, and the Midrashic Literature*, which is a monument of untiring erudition and broad scholarship.

JASTROW, Morris, Jr., American Orientalist: b. Warsaw, Poland, 1861, Aug. 13. He was a son of the preceding, and coming to Philadelphia with his parents in early childhood, he was trained in the schools of that city, graduated from its university in 1881, and from the University of Leipsic 1884. He has been for many years professor of Semitic languages and librarian of the University of Pennsylvania. He was originally trained for the Jewish ministry, studying for some time at the Jewish Seminary of Breslau, Germany, and was appointed assistant to his father's synagogue, Philadelphia, which position he voluntarily resigned. His published works are: *Religion of the Assyrians and Babylonians* (1898); *Two Grammatical Treatises of Abu Zakariyya Hayyug* (1897); *A Fragment of the Babylonian Dibbarra Epic* (1891); *The Study of Religion* (1902); etc. He has edited *Selected Essays of James Darmesteter* (1895). He is a frequent contributor to learned periodicals and to various encyclopædias.

JÂTAKA [literally, 'relating to birth']: with the Buddhists, the name of a work or a series of books containing an account of 550 previous births of Sâkya Muni, or the Buddha. Several tales that pass under the name of Æsop's fables are found in this collection of legends.

JÂTS, *jâts*, or Jauts, *jawts:* race of people inhabiting chiefly the n.w. portion of India between the Indus and the Ganges rivers, though also widely spread through Sind, Baluchistan and the N.W. Provinces; estimated to comprise two-fifths the entire population of the Punjab and half that of the Rajput states; and regarded by various ethnologists as descendants of the first Aryan settlers in the valley of the Indus, of the ancient Getæ, Dacians, Huns, Avars, Yuechi, and other lost tribes, and as progenitors of the gypsies. They are tall, extremely dark, well formed, quite nomadic in habit, ferocious in

war, and expert agriculturists and stock-breeders. Those settled on the Ganges and Jamna are divided into two great clans, while those in the Punjab comprise more than 100 tribes. In religion they generally accept the belief of their locality, and the whole race is about evenly divided between Mohammedan, Brahman, and Sikh doctrines. Their language is a variety of Sindhi, and is a pure Sanskrit tongue, exhibiting unusually early grammatical forms. The Jats, with a tribe called Meds, comprised the bulk of the population of Sind at the time of the Mohammedan conquest, A.D. 712. They served in Mohammed Kasim's army, vigorously resisted the Arab invaders, were overthrown by Amran 836, invaded Mansura 1025, sustained memorable sieges at Bhartpur, 1805 and 26, and were subdued by the British in the latter year.

JAUMANGE, n. *zhō-măngzh'* [F. *jaune*, yellow; *manger*, meat]: a variety of blancmange; Dutch flummery.

JAUNCING, n. *jawn'sĭng:* in *OE.*, for *jaunting*, pleasure-seeking.

JAUNDICE, n. *jân'dĭs* [F. *jaunisse*, the yellow disease —from F. *jaune;* OF. *jalne*, yellow—from L. *galbĭnus* or *galbănus*, greenish-yellow]: a disease of the liver characterized by yellowness of the skin and of the conjunctiva of the eye, and general langour. JAUN'DICED, a. *-dĭst*, affected with jaundice; prejudiced; biassed. JAUNDICED EYE, an eye which sees faults and blemishes which do not exist.—*Jaundice* arises from the presence of the coloring matter of the bile in the blood and tissues, and is a symptom of various disordered conditions of the system, rather than a special disease.

With this coloring of the skin and eyes the following symptoms are associated: the feces are of grayish or dirty-white tint, in consequence of the absence of bile, and the urin is of the color of saffron, or is even as dark as porter, in consequence of the presence of the coloring matter of the bile. There is sometimes, but not always, an extreme itching of the skin. It is a popular belief, as old as the time of Lucretius—

Lurida præterea fiunt quæcunque tuentur arquati—

that to a jaundiced eye everything appears yellow. This, however, like the preceding, is only an occasional symptom.

The most obvious cause of jaundice is some obstruction in the gall-ducts, preventing the normal flow of bile into the intestine. This obstruction may arise in any of the following ways: 1. It may be caused by the impaction of a gallstone in the common hepatic duct. In this case, the jaundice is usually of short duration, and disappears soon after the gall-stone has passed into the intestine. 2. Another cause of jaundice is the obstruction of the gall-ducts by cancerous disease of the head of the

pancreas, by tumors in the liver, or by a diseased condition of the duodenum, the portion of small intestine into which the common hepatic duct opens. In these cases, the obstruction is usually permanent, and causes a persistence of the jaundice. 3. Obstruction or closure of the gall-ducts sometimes occurs in cirrhosis of the liver, and sometimes may be caused by inflammation originating in the ducts themselves, which, from their small size, may be readily closed up by inflammatory swelling of their mucous membrane. 4. The jaundice that occasionally arises from constipation, or that occurs during the advanced stage of pregnancy, is probably caused by pressure upon the common hepatic duct.

But though jaundice is frequently caused by some of these mechanical impediments to the flow of bile into the intestine, it results primarily and solely in a great number of cases from the secretion of bile being suppressed or deficient. The secretion may be suppressed so as to cause jaundice by a sudden mental shock or by continued anxiety. Various poisons in the blood may also suspend the secretion of bile to such an extent as to cause jaundice. It may be produced in this way by the salts of copper and of mercury, by opium, and by the poison of serpents; and it often occurs, from the poisoned state of the blood, in the course of fevers, especially the virulent fevers of tropical climates.

The prognosis in jaundice is generally favorable, except when it depends on structural disease of the liver. The treatment must be guided chiefly by reference to the conditions which give rise to it in any particular case, and should never be attempted without professional advice.—*Malignant Jaundice* is a name sometimes given to a very fatal disease, acute yellow atrophy of the liver.

JAUNT, n. *jânt* [OF. *jancer*, to stir, as a horse in the stable till he sweat: Manx, *jonse*, a jolt, the acting in a wild untamed manner: OE. *jaunce*, to jolt as rough-riders are wont to do]: a stirring or rambling about; a short journey; a trip: V. to journey; to wander here and there; to take short trips. JAUNT'ING, imp.: N. a rambling for pleasure or exercise: ADJ. used for short journeys, as a *jaunting* car. JAUNT'ED, pp.—SYN. of 'jaunt, n.': excursion; tour; ramble; journey; flight.

JAUNTY, a. *jân'tĭ* [F. *gentil*, pretty, agreeable]: airy; showy; gay. JAUN'TINESS, n. airiness; showiness; flutter. JAUN'TILY, ad. *-lĭ*, gayly. *Note.*—JAUNTY is perhaps from JAUNT, meaning 'to wander idly and airily about.'

JAURÉS, JEAN LEON, *zhō-rā*, French Socialist: b. Castres 1859. He taught at Albi and Toulouse, and in 1885 entered politics and was elected to the Chamber of Deputies from Tarn: at this time he was a moderate Republican. In 1889 he failed of re-election, and returned to Toulouse, where he was active in the estab-

lishing of a college of medicine. Becoming a Socialist, he defended the strikers at Carmaux, and in 1893 was again elected to the Chamber, where he became one of the leaders of the Socialists. He failed of re-election in 1898, but was again elected in 1902. When the Socialist Millerand accepted a position in the cabinet, Jaurés defended his action, thus opposing Guesde and the *Parti Ouvrier*, but sought at the same time to reconcile the factions. He also took an important part in obtaining a revision of the Dreyfus case. He still holds a position of leadership and influence in the Socialist party of France, and is acknowledged to be one of the best orators in the chamber of deputies. He has written *Studies in Socialism.*

JAVA, *jâ'va* (Djawa): 'the Queen of the Eastern Archipelago,' a most valuable colonial possession of the Netherlands, lat. 5° 2′—8°50″ s., and long. 105° 12′——114° 39′ e. It is washed on the n. by the Sea of Java, e. by the Strait of Bali, s. by the Indian Ocean, w. by the Strait of Sunda. The extreme length from e. to w. is 666 m., the breadth varies from 56 to 136 m.; area 50,-260 sq. m. The island is mountainous, and cut in many parts by deep gorges and rushing streams. The mountains rise to a height of 4,000 to 12,000 ft., and are clothed to their summits with luxuriant foliage. Of the lofty mountains, 46 are volcanoes, of which 16 are active. Dreadful eruptions took place, 1772 and 1822. The small volcanic island of Krakatoa, in the Strait of Sunda, between Java and Sumatra, was 1883 the scene of a stupendous volcanic convulsion which submerged some parts of the adjoining land and created new islands. The accompanying earthquake wave destroyed Anjer in Java, and various places in Sumatra, and flooding the coasts, caused the loss of tens of thousands of human lives.

Pop. of Java includ. Madura (1900) 28,745,698. The Javans belong to the Malay (q.v.) race; in moral habits and civilization they are superior to the inhabitants of Sumatra and Celebes. Entire religious liberty is granted by the government to members of all religious confessions. The majority of the natives of the interior are made acquainted neither with the Christian religion nor with European education. Though Mohammedanism is nominally the religion of Java, the great mass of the Javanese are believers in the primitive animism of their ancestors.

The island is divided into E., W., and Middle Java, containing 23 subdivisions, called Residencies, over which a superior European official, the Resident, exercises general control, and acts as judge, collecter, and magistrate. The Resident has European assistants, who perform the same functions in districts of residency; and native agency is extensively employed also in the govt. service. Indeed, all the chiefs are either present or expectant

salaried servants of the colonial govt., actually engaged, under European superintendence, in ruling the people. The chief native official of the district is the Regent, selected from the family of the former local prince. The superior administrative and executive power is in the hands of a gov. gen., who is also gov. of the Dutch E. Indies.

The following are details as to the several residencies or governmental divisions of the island:

Djokjokarta and Surakarta are called the Vorstenlanden (Lands of the Princes), the former having a native sultan, the latter an emperor, vassals of the Dutch. Begalen is one of the most fertile residencies, and produces coffee, indigo, tea, cinnamon, rice, tobacco, sugar, maize, cotton, cocoa-nuts, and great variety of fruits. Banjoomaas is very mountainous toward the n. and n.e. Banjoewangi, in the e. of the island, is mountainous, well wooded, and fertile. Bantam, a residency in the west corner of Java, is low and marshy on the n. coast. Toward the interior, it gradually becomes mountainous, with beautiful valleys between the heights. The soil is generally fertile, producing the usual crops of the island. Bantam, former capital of the powerful kingdom of that name, is now little more than a village. Bezooki, on the e. coast, is mountainous, and clothed with a luxuriant vegetation. Buitenzorg, an assistant-residency, is very healthful, and often has a favorable influence on the sick from other districts of Java, especially of Batavia, to which it is contiguous. Buitenzorg, the capital, is 883 ft. above sea-level, and is one of the most pleasant places in the island. Cheribon is a very extensive and beautiful residency, and, like most of the others, derives its name from that of its capital. Djokjokarta produces the usual crops. The natives are much addicted to the use of opium. The capital city is large, and regularly built. It is the seat of the sultan, the resident, and assistant-resident. Pop. 50,000. Japara, on the n. coast, has a very warm climate in the interior. Kadoo—i.e., hollow—is a large basin formed by lofty mountains, some peaks being over 10,000 ft. high. It is one of the smallest residencies of Java, but densely peopled. Its fertility is increased by the abundance of water flowing from the surrounding mountains. Kediri consists of a plain bounded by mountains on the n., e., and west. The navigable river Brantas affords great trading facilities. Pasocroewan, washed by the Strait of Madura, has important fisheries, and is famed for its race of horses. The Preanger Regencies are partly occupied with mountains, forming two chains: between these are many extensive valleys of the richest soil. There are many rivers, of which five are navigable. Probolinggo produces much sugar and coffee.

Rembang produces the usual crops. The n. parts are dry and sandy; and in the s. are extensive forests,

abounding in teak and other valuable timber trees. Rembang, the capital, has a small Prot. church and schools. See SAMARANG; SURABAYA; and SURAKARTA.

Tagal is very fertile. It is washed on the n. by the Java Sea, and the fisheries are important. In the s. of the residency is the volcano Slamat, 11,320 ft. high. Tagal, the capital, is a small but neatly built town, with considerable coasting-trade.

The material prosperity of Java is owing in great measure to the energy with which the Dutch govt. has extended the growth and manufacture of those articles which form its staple exports. An elaborate 'culture-system' was introduced 1830, by which a certain proportion of their land and the gratuitous labor of one day in seven were exigible from the natives for the growth of government crops, especially coffee. As this system was rigidly and skilfully carried out, the staples for exportation grew rapidly, and what had been a burdensome colony became for the Netherlands a mine of wealth. Ever since 1856, this most oppressive scheme of *exploitation*, the 'culture system,' has been in course of gradual relaxation. By a law passed in 1870 the forced cultivation of sugar was totally abolished in 1890. At present the forced labor of the natives can be required only for the production of coffee, which is sold by the govt. partly in the colonies, but mostly in the Netherlands. The severity of the forced labor system led to serious outbreaks requiring the presence of troops and involving the loss of many lives 1884 and '88. The situation was so threatening in 1888 that the Netherlands govt. found it expedient to remit the sugar export duty for 5 years, abolish govt. rents, and defer for 5 years the payment of half the interest then due the govt.

The greater part of the island is still uncultivated. Rice is grown extensively for native consumption; there is also a large production of sugar, of cinchona, tobacco, tea, indigo, coffee (in Dutch East Indies) maize, cotton, and other plants. A large proportion of the products of the island is the property of the government, and is managed, stored, shipped (exclusively in Dutch ships), and sold in Holland by the Netherlands Trading Company, whose profits arise from the commission allowed on the transactions. The import and export duties are very high, but much modified in favor of the Netherlands. The Javanese are much addicted to smoking opium, which the government does not permit to be grown on the island. But it imports the quantity considered necessary, and grants licenses for its sale, realizing therefrom a large annual revenue.

*Chief Towns.*—Batavia (see BATAVIA), cap. (pop. 1900, 115,887), Surabaya (146,944), and Samarang (89,286).

*Climate.*—With the exception of some marshy dists. on the n. coast, the climate of Java is healthful and

pleasant. On the coasts the thermometer seldom indicates more than 93° F. during the dry, and 84° in the rainy season. The average is 80° at noon and 70° in the evening. The heat is moderated by the sea-breezes, which constantly blow across the island. Along the high lands of the interior the air is not only breezy, but sometimes cold, the thermometer frequently falling to 45° ; and as the entire island is intersected with excellent roads, it is not difficult to reach the most beautiful and salubrious districts. Inland of Samarang, at an elevation of 4,000 ft., Europeans find a pleasant retreat during the dry season.

*Language.*—The languages spoken in Java are two, Javanese and Sunda, having some words in common, but showing essential differences. Of these two, the Javanese is the superior. Both have alphabets utterly unlike the various Hindu alphabets, and bear marks of originality, as though invented by the people themselves. There are various foreign elements, such as Sanskrit, Arabic, Telugu; of these Sanskrit is predominant. The Javanese has been a written language from very early times, and has a considerable literature, generally metrical and with a peculiar rhythm. There are three dialects of it—vulgar, polite, and ancient or recondite.

*History.*—The history of Java, previous to the 14th c., is involved in fable and obscurity. It appears, however, that the Javanese, from a very early period, possessed considerable civilization, probably the result of the labors of Brahmanical teachers from Hindustan. It is impossible to say precisely when Hindu civilization and religion were introduced into Java, though it must have been very early in the Christian era. Buddhism was superadded; and there are many old Buddhist temples scattered throughout the island, memorials of the former prevalence of that religion. The most famous is that called Boro Buddor (q.v.). Toward the close of the 14th. c., Mohammedanism found a footing in the e. provinces; and 1475, the Hindu empire was overthrown; and Mohammedanism became the faith of the country, yet as late as 1511, when first the Portuguese visited Java, they found a Hindu king in Bantam. In 1595, the Dutch sent out an expedition under Houtman, who, on arriving at Bantam, found the king at war with the Portuguese, and offered him assistance, obtaining in return permission to build a factory. In 1677, after many contests with the native princes, the Dutch obtained extensive territories and important trading concessions. In 1811, when Holland became incorporated with France, the British took possession of Java, which, after 5 years' occupation, was restored to the Dutch. A long and bloody war ended in the whole island becoming virtually a Dutch province 1830, though two states are still nominally ruled by native princes. Slavery was abolished in the island 1860.—See Sir Stamford Raffles'

*History of Java* (1817); Crawford's *Eastern Archipelago;* Money's *Java;* Wallace's *Malay Archipelago;* the great work on Java by Prof. Veth of Leyden (3 vols. 1875–80). Bastian, *Indonesien;* Blume, *Floræ Javæ;* Breitenstein, *Java;* Chailley-Bert, *Java et ses habitants* (Paris 1900); Crawford, *Asiatic Research;* Dulaurie, *Memoirs relatifs au cours des langues Malaie et Javanese;* Giesehagen, *Aus Java und Sumatra;* Gronemann, *In den Kedaton te Jogjakarter;* Higginson, *Java, the Pearl of the East;* Horsfield, *Zoological Research in Java and the Neighboring Islands;* Junghuhu, *Java;* Kohlbrugge, *L'Anthrophologines des Tenggerois;* Meyer, *Die Kalangs auf Java;* Müller, *Beschreibung der Insel Java* (trans.); Scidmore, *Java, the Garden of the East;* Van Nooten, *Fleurs, fruits, et feuillages de l'ile de Java;* Verbeek and Fennema, *Description geologique de Java et Madoura.*

JAVEL, n. *jăv'ĕl* [unascertained]: in *OE.* and *Scot.*, a worthless fellow; a dirty wanderer.

JAVELIN, n. *jăv'lĭn* [F. *javeline*, a javelin—from It. *giavelina;* Sp. *jabalina*, a boar-spear—from *jabali*, a wild boar: Ir. *gafa*, a hook; *gabhla*, a spear]: short light spear used for darting against an enemy. In the Roman legion, the first and second lines (the Hastati and the Principes) were armed with two javelins to each man. Each javelin (Lat. *pilum*) was in all about 6¾ ft. in length; the shaft 4½ ft. long, of tough wood, an inch in diameter; and the remainder given to the barbed pyramidal head. In action, the legionary hurled one javelin on the enemy at the first onset; the second he retained as a defense against cavalry. The Goths and other barbarians used javelins. JAVELIN-MEN, in England, attendants on the sheriffs and judges at assizes.

JAWHOLE, n. *jăw'hōl* [F. *gachis*, splashing: Ger. *gauche*, slops: Scot. *jaw*, to dash, to spirt; *jaw*, a wave]: a gully-hole; sink where slops are thrown.

JAWS, n. plu. *jawz* [F. *joue*, the cheek: Wall. *chawer;* OE. *chaff*, to chirp, to chatter: O. Dut. *kouwe*, the cavity of the mouth—from *kouwen*, to chew: Dut. *kauwe*, a chattering daw; a jaw: comp. OE. *chaff-bones*, or *chaw-bones*]: the bones of the head in which the teeth are fixed, consisting of an upper and a lower *jaw*, in man of a horse-shoe shape; the mouth; in *slang*, *jaw* is simply 'speech, or offensive irritating talk'; the inner ends of the booms or gaffs of a ship hollowed in. JAW, v. in *slang*, to talk noisily to, or in an irritating, offensive manner. JAW'ING, imp. JAWED, *jawd:* ADJ. having jaws; having the character of a jaw or jaws. JAW'FALLEN, depressed; dejected; depressed in spirits. JAW'-BONE, n. the bone of the jaw containing the teeth; in *slang*, credit. JAW'-BREAKER, a word difficult to pronounce

JAXAR'TES. See SYR-DARIA.

JAY, n. *jā* [OF. *jay* or *gay;* F. *geai;* Sp. *gaio;* Dut.

*kauwe*, a jay, a daw—so called from its *gay* colors: comp. Sp. *gayar*, to garnish with variegated trimming], (*Garrulus*): genus of the crow family (*Corvidæ*), differing from magpies chiefly in the rather short bill, and in the shorter and rounded, sometimes almost even tail. They are inhabitants of forests and wooded districts, chiefly in temperate parts of Europe, Asia and N. America; and feed more on fruits and seeds than crows and magpies generally do; but they have the omnivorous character of the rest of the family, and often rob the nests of other birds, whether containing eggs or young.—The COMMON JAY (*G. glandarius*) is a well-known native of England and of the south and middle of Scotland, though far less common than formerly in consequence of the incessant war waged against it, by game-keepers and by the legislature itself; an English statute of the 17th year of George II. having empowered grand juries to offer three-pence for the head of each jay, on account of alleged injury done to young trees. It is rather smaller than a jackdaw; the plumage is mostly ash-gray, finely tinged with red or purple, the quill-feathers and tail mostly black, a beautiful mottled patch on each wing rayed with bright blue, a broad mustache-like stripe of black extending for an inch from the base of the lower mandible on each side; the head is furnished with a crest of erectile feathers, each of which has a streak of black in the middle. Jays are most frequently seen solitary or in pairs. They build in thick trees or bushes, and their nest is a basket-like structure of small sticks, lined with fine roots and grasses; the eggs, five or six in number, are yellowish-white, minutely and thickly speckled with light brown. When taken young, the jay is very easily tamed, becomes very familiar and amusing and excels in its power of imitating voices and sounds.—The BLUE JAY (G. *cristatus*) of N. America, a species abundant from the Gulf of Mexico to Canada, is smaller than the Common jay; it has a similar crest or tuft on the head, and a longer and more rounded tail. The general color of the upper parts is bright purplish-blue; the wings and tail white, barred with black; the neck surrounded with a curved black collar. It is more gregarious than the Common jay, and partially migratory.—The CANADA JAY, or CARRION BIRD (*G. Canadensis*), is a more northern American species.—Other very beautiful species are found in the n.w. of America, in Mexico, and the Himalaya Mountains.

JAY, JOHN, LL.D.: 1745, Dec. 12—1829, May 17; b. New York: statesman. He graduated at King's (now Columbia) College 1764, was admitted to the bar 1768, became a member of the New York committee of correspondence and proposed a congress of delegates from all the colonies 1774, May, was a member of this congress, held in Philadelphia Sep. 5, and wrote the 'address to the people of Great Britain' adopted Oct., was a member

of the second congress and author of the 'address to the people of Canada' adopted 1775, May, was a member of the committee of correspondence with 'European friends of American liberty,' member of the provincial congress of New York and author of the constitution of 1777, chief-justice of N. Y. 1777–78, member and pres. of the continental congress 1778, minister to Spain 1779-83, colleague with Franklin and Adams in negotiating peace with Great Britain 1782, and secretary of foreign affairs 1784–9. His personal influence and articles in *The Federalist* (q.v.) did much to secure the adhesion of N. Y. to the federal constitution 1788, and in the following year Washington appointed him the first chief-justice of the United States. In 1794 he was appointed a special envoy to Great Britain and negotiated with Lord Granville what is known as 'Jay's Treaty,' the ratification of which by the American senate in spite of great opposition averted another war with Great Britain. He was elected governor of N. Y. before his return, was re-elected 1798, declined reappointment tendered by President Adams as chief-justice of the U. S. supreme court 1801, and spent the remainder of his life on his estate at Bedford, Westchester co., N. Y. In 1785 he was president of a society in New York organized to promote the emancipation of slaves, and the abolition of slavery in the state was accomplished 1799 largely through his exertions. He was an active member of the Prot. Episc. Church; and his last office was the presidency of the American Bible Society. He received the degree LL.D. from Harvard College while U. S. chief-justice.

JAY, JOHN: diplomatist: b. New York, 1817, June 23; d. 1894, May 5; son of William Jay. He graduated at Columbia College 1836, was admitted to the bar 1839, was sec. of the Irish relief committee 1847, counsel for many fugitive slaves before the civil war, organized the meetings (1854) that led to the formation of the republican party 1855, was U. S. minister to Austria 1869–75, and republican member and pres. of the N. Y. civil service commission 1883. He was corresponding sec. of the N. Y. Hist. Soc., pres. of the Union League Club 1866–70 and 77, first president of the Huguenot Society 1885, and an active member of the American Geographical and Statistical Soc., and of the Prot. Episc. Church. His published works include: *The Dignity of the Abolition Cause, as Compared with the Political Schemes of the Day* (1839), *Caste and Slavery in the American Church* (1843), *The Proxy Bill and the Tract Society* (1859), *The American Church and the American Slave Trade* (1860), *The Great Conspiracy and England's Neutrality* (1861), *America Free, or America Slave*, and *The Memories of the Past* (1867).

JAY, WILLIAM: 1769. May 6—1853, Dec. 27; b. Tisbury, Wiltshire: English Congregational minister, of much celebrity for pulpit eloquence, and as a voluminous

JOHN JAY.

Chief Justice United States Supreme Court 1789—1795.

writer of devotional, practical, and other religious works. His father was a stone-cutter and mason, and young Jay's first employment was that of mason's boy; but while young he was sent to Marlborough Acad., an institution of the Congregationalists for training young men for the ministry. According to the custom of Congregationalists in England, he was sent out to preach in country villages almost in his boyhood—preaching his first regular sermon in his 17th year, and preaching nearly a thousand times before he was 21. After a humble pastorate near Chippenham, he officiated for a year in a chapel at Clifton; and 1791, was unanimously called to the pastorate of the church in Argyle Chapel, Bath, which position he occupied 62 years. He retired from it 1853, Jan., and died in the same year, at the age of 84. His style in the pulpit was very practical and direct, and sometimes lacked refinement, but was always impressive. Jay's published works, in general, attained a rapid and very extensive popularity. Among them are Sermons, Family Prayers, *Morning and Evening Exercises*, *Mornings with Jesus*, an Essay on Marriage, Memoirs of the Rev. Cornelius Winter, Memoirs of the Rev. John Clark, Lectures on Female Scripture Characters, and an Autobiography. A collected ed. of his works, 12 vols., revised by himself, was published 1841, but is incomplete, as some of his works were of more recent date.

JAY, WILLIAM, LL.D.: lawyer: 1789, June 16—1858, Oct. 14; b. New York; second son of JOHN JAY. He graduated at Yale College 1808, studied law in Albany, assisted Elias Boudinot in organizing the American Bible Soc. 1810, was appointed judge of the court of common pleas of Westchester co., 1818, was the first judge in the co. under the new constitution 1821–43, an early and persistent anti-slavery advocate, and author of numerous publications including *Life and Writings of John Jay* (1833), *An Inquiry into the Character and Tendency of the American Colonization and American Anti-Slavery Societies* (1834), *A View of the Action of the Federal Government in Behalf of Slavery* (1837), *War and Peace: the Evils of the First, with a Plan for Securing the Last* (1848), *Causes and Consequences of the Mexican War* (1849), and *An Address to the Non-Slaveholders of the South, on the Social and Political Evils of Slavery* (1849). He left a manuscript *Commentary on the Bible.*

JAYADEVA, *jī-a-dā'va:* Hindu poet, who, according to some, lived about the middle of the 11th, according to others, about the middle of the 16th c. His great work is the *Gîtagovinda*, an erotic poem in honor of Krishna an incarnation of Vishnu, and of his wife *Râdhâ*, interpreted in a literal and mystical sense.

JAY'S TREATY, 1794. The Articles of Confederation provided that the States might nullify at will any provi-

sions of whatever commercial treaty Congress might negotiate; of course therefore no nation with much commerce to be disturbed by our competition would make such treaties with us. Our chief commerce was with Great Britain; and that country would make no commercial treaty whatever with us, even for years after the Constitution had given Congress power to enforce its treaties. There were two main reasons for this: first, that Great Britain had valuable commercial monopolies (especially in the West Indies) for which she thought we could return no equivalent; second, she was angry over the *sequelæ* of the peace of 1783. She had agreed to surrender the border forts on the Great Lakes, the St. Lawrence, and Lake Champlain, and carry off no negroes, on condition that Congress 'recommend' to the States to restore confiscated Tory property, and agree to confiscate no more. Congress did so twice emphatically, but the States paid no attention to it; the British government, though it knew very well how much the recommendation meant, made this an excuse to retain the forts and refuse payment for 3,000 negroes carried off; this in turn hardened the States to refuse compliance with the treaty, and the forts being made a basis for Indian outrages winked at by the British commandants enraged the country still more. The Republicans, who sympathized with the new French Republic and hated Great Britain, held the House; the Federalists, whose sympathies were exactly opposite, the Senate by a small majority. In 1793, Dec. 16, Jefferson made a famous report on a House resolution, recommending retaliatory duties; and after an acrid debate the Republicans pushed through a non-intercourse resolution, only defeated even in the Senate by Vice-President Adams' casting vote. But Washington threw his weight into the scale of peace, and nominated Chief Justice John Jay as envoy extraordinary to negotiate a commercial treaty. With Lord Granville he drew up one, 1794, Nov. 19, which removed the chief American grievance by surrendering the forts, but refused compensation for the negroes and referred all other claims to commissioners; and as to commerce, allowed direct but not coasting trade between the United States and the British East and West Indies (the latter in vessels of not over 70 tons), but denied the United States the right to export sugar, molasses, coffee, cocoa, or cotton to Europe—in other words, to become an intermediary for the British colonies to evade the British commercial monopoly; and limited even this provision to two years after peace with the powers then at war with Great Britain. There were also clauses which impliedly recognized British right of search and impressment, and power to make anything contraband. The treaty was ratified by the Senate in secret session 1795, June 8, but when published excited an uproar of public indignation; Jay was burned in effigy, and even Washington vilified in-

credibly. The Virginia legislature and the Federal House practically passed votes of censure; but the people gradually came to recognize that it was the best thing to be had, hard as were the terms; the commercial bodies in the States openly commended it; Hamilton wrote his 'Camillus' letters in its favor; and after a bitter struggle for many weeks in the House to refuse compliance with the Senate action, the treaty won by 51 to 48.

JEALOUS, a. *jĕl'ŭs* [F. *jaloux*, jealous—from OF. *jalous*—from mid. L. *zēlōsus*, jealous—from L. *zēlŭs;* Gr. *zēlŏs*, zeal, jealousy]: suspicious of rivalry; suspicious of not enjoying the affection or love of another; anxiously careful and concerned for anything; in *OE.*, careful; fearful; vigilant. JEAL'OUSNESS, n. *-nĕs*, or JEAL'OUSY, n. *-ŭs-ĭ*, the uneasiness which arises from the fear of another robbing us of the love or affection of one whom we love; suspicious caution, vigilance, or rivalry; earnest concern or solicitude. JEAL'OUSLY, ad. *-lĭ*. *Note.*—JEALOUS may be connected with Gael. *dileas* = *jēlyas*, loyal, faithful—for the *jealous* one is supposed to be loyal and faithful, on the supposition that 'there is no love without *jealousy*.'—SYN. of 'jealous': suspicious; envious; anxious; vigilant; solicitous; apprehensive; uneasy; invidious; emulous.

JEAN, n. *jān* [F. *jean*—from *Genoa*]: a kind of stout cotton cloth. SATIN-JEAN, a stout cotton cloth woven to have the smooth glossy surface of satin, used for stays, shoes, etc. JEANNETTE, n. *jān-nĕt*, a fabric closely resembling jean, but not so close in texture, and coarser.

JEANNETTE' EXPEDI'TION. See POLAR EXPEDITIONS.

JEBB, *jĕb*, Sir JOSHUA: 1793–1863, June 26; b. Walton, Derbyshire, England: prison reformer. He was educated at the Royal Military College and at Woolwich; entered the Royal Engineers 1812; served in Canada, the United States, and the W. Indies; entered civil employment 1838; was appointed surveyor-gen. of prisons and inspector-gen. of military prisons, and chairman of the board of directors of convict prisons 1848: was created a K.C.B. in the civil division and promoted to major-general 1859. His early efforts in behalf of prison reform were to improve the condition of convicts through a reduction of their terms of imprisonment for good behavior. He was the founder and promoter of the ticket-of-leave system; and in the Pentonville prison, built according to his improved plans 1840, he inaugurated the separate or solitary confinement system. He published several works on penal laws and prison discipline.

JEBB, Sir RICHARD CLAVERHOUSE, English Greek scholar: b. Dundee, Scotland, 1841, Aug. 27; d. 1905, Dec. 9. He was educated at the Charterhouse, London, and Cambridge University, and in 1869 became public orator there. In 1875 he was called to fill the Greek

chair in Glasgow University, which he resigned in 1889, on being appointed Greek professor at Cambridge. He several times visited the United States, and in 1874 married the widow of a general in the United States army. He was lecturer at Johns Hopkins University, Baltimore, in 1892. His best known works are: *The Attic Orators* (1876); *Modern Greece* (1880); a *Life of Richard Bentley* (1882); *Homer: an Introduction to the Iliad and Odyssey* (1886); *Lectures on Greek Poetry* (1893); *Humanism in Education* (1899); and an addition of Sophocles, with notes and translation. After 1891 he represented Cambridge University in Parliament. He was knighted in 1900.

JED'DAH. See JIDDAH.

JED'DO, or JED'O, or YED'O. See TOKIO.

JEE, *jē:* cry to a horse: same as GEE, which see. A-JEE, in *Scot.*, to one side; awry.

JEEJEE'BHOY. See JEJEEBHOY.

JEER, v. *jēr* [Ger. *scheeren*, to rail at, to jest; Icel. *dar*, derision; *dara*, to make sport of: a corruption of the Ger. phrase *den-gek-scheeren*, to shear the fool]: to deride; to scoff; to make a mock of: N. a taunt; mockery; derision. JEER'ING, imp.: N. mockery: ADJ. having the character of a jeer. JEERED, pp. *jērd*. JEER'ER, n. *-ėr*, one who jeers. JEER'INGLY, ad. *-lĭ*.—SYN. of 'jeer, v.': to sneer; gibe; flout; mock; taunt.

JEFFERISITE, n. *jĕf'ėr-ĭs-īt* [after W. W. *Jefferis*]: a mica-like mineral, which exfoliates remarkably when heated to 300°; composition essentially a hydrated silicate of alumina, iron, and magnesia; occurring in veins in serpentine at Westchester, Penn.

JEFFERSON, *jĕf'fėr-son:* city, cap. of Marion co., Tex.; on Big Cyprus Bayou and the M. K. and T. and Texas and Pacific railroads; 40 m. n.w. of Soda Lake, 40 m. n.w. of Shreveport, 162 m. e. of Dallas, 260 m. n.e. of Austin. It is connected by the bayou and lake with Red river, is the largest city in n.e. Tex., has large deposits of coal and iron ore in its vicinity, and is the shipping point for a great extent of fertile country, chiefly to New Orleans. Its commerce comprises cotton, cattle, beef, hides, tallow, wool, and osage-orange seeds; and its manufactures iron, lumber, bricks, leather, and minor articles. It was settled 1843, incorporated in 1866 and contains several churches, Rom. Cath. female acad., banks and daily and weekly newspapers. Pop. (1905) about 3,000.

JEFFERSON, Wis., city and county-seat of Jefferson county, at the junction of the Rock and Crawfish rivers, 50 m. w. of Milwaukee; and on the Chicago & Northwestern railroad. It was settled in 1837 and is governed by a mayor and a council elected every two years under a charter of 1893. It has pork-packing plants, flour-

JOSEPH JEFFERSON.
As Rip Van Winkle.

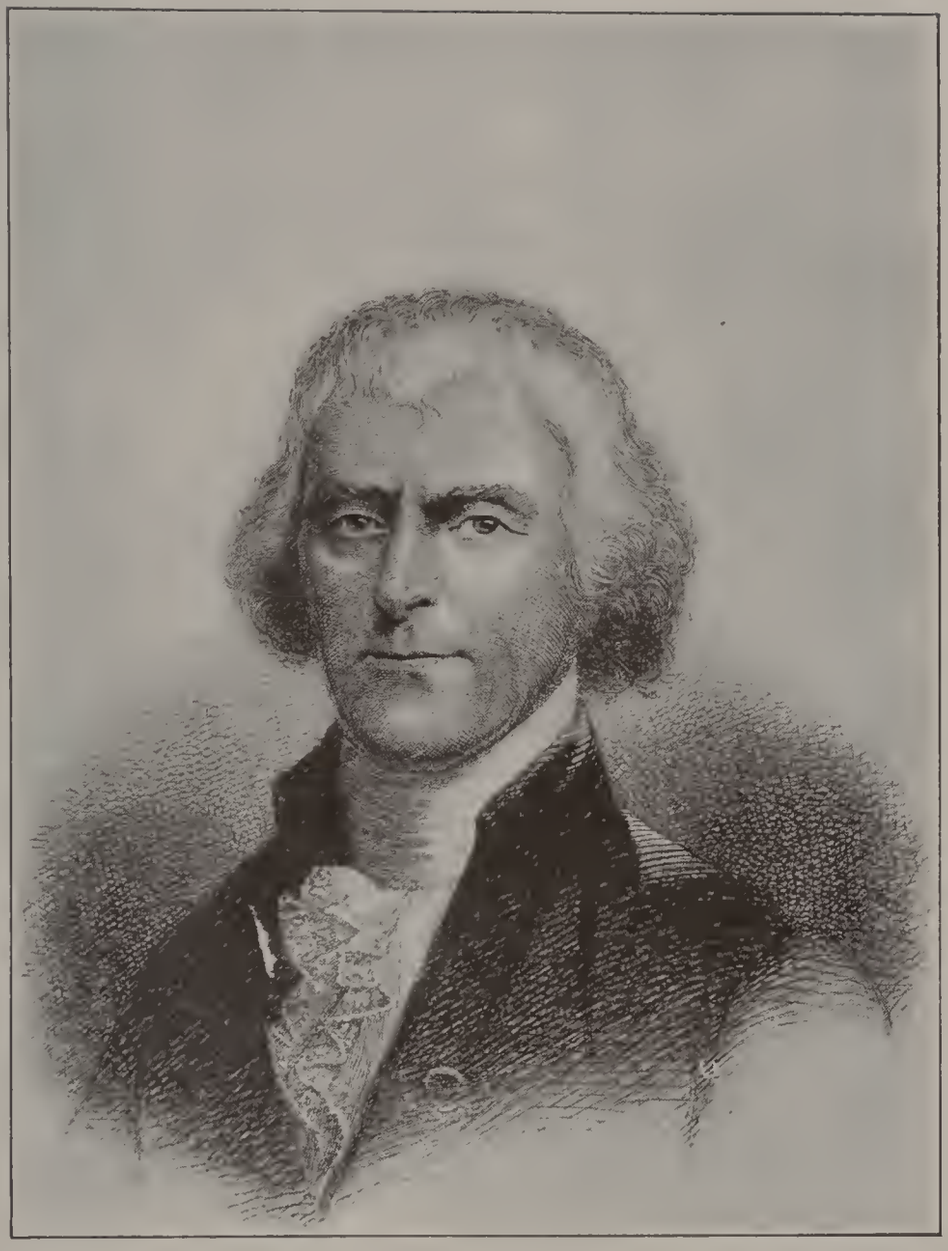
mills, tanneries, brick and tile works, carriage and wagon factories and other industries. The city owns and operates the waterworks and the electric-lighting plant. Pop. (1910) 2,582.

JEF'FERSON, Joseph: b. Philadelphia, Penn., 1829, Feb. 20; d. Palm Beach, Fla., 1905, Apr. 23; actor. Descended from a long line of actors. His first appearance on the stage was in Washington, as the child in *Pizarro*, when three years old, played in his father's small theatre in Chicago when he was 10, removed with the family to Mobile, where his father died, joined a party of strolling players in Tex., 1843, and travelled through the state till the opening of the Mexican war, followed the American army under General Taylor's protection and played in the conquered towns as far as Matamoras, where all civilians were ordered from the army, and from the close of the war till 1856 was employed playing and managing in New York and other large cities. In 1856 he rested a while in Europe, and declined a farce engagement at Drury Lane Theatre, London; then played in the n. and e. American cities till the beginning of the civil war; fulfilled engagements in Cal. and Australia till 1865, when he made a second trip to London; and produced Boucicault's version of *Rip Van Winkle* for the first time, Sep. 4. He returned to the United States 1866, and was thereafter constantly before the public with his most popular Rip Van Winkle, Bob Acres, Golighty, Sir Hugh de Brass, Caleb Plummer, Dr. Pangloss, Newman Noggs, and Dr. Ollapod. 1889, Oct. 14, he began a season in New York with William J. Florence and Mrs. John Drew as Bob Acres in the *Rivals*. He spent his leisure in summer on his farm at Hohokus, N. J., and in winter on his plantation on Bayou Teche, La., and was an ardent sportsman. In the later years of his life he played but a few weeks annually in a repertoire of favorite parts. He also made a considerable reputation as an artist by his impressionist landscapes in oils. His acting method was distinguished by ease, verisimilitude, and perfection of finish. In the plays used by him he, for artistic purposes, introduced several admirable changes and additions. He published an interesting *Autobiography* (1890); and a *Reply to Ignatius Donnelly on the Shakespeare-Bacon Argument*. Consult the *Autobiography* and Carroll, *Twelve Americans* (1883).

JEF'FERSON, Thomas, ll.d.: third president of the United States; 1743, April 2—1826, July 4; b. Shadwell, Albemarle co., Va.; third child and eldest son of Peter Jefferson, a wheat and tobacco planter, well-educated, and widely known as well for his great physical strength as for his discriminating literary taste and his skill as a mathematician and surveyor; and of Jane, daughter of Isham Randolph and granddaughter of William Randolph, the Va. colonist. Jefferson was descended from a Welsh family that settled in Va. prior to 1619, one of

whose members was a delegate to the house of burgesses —the first legislative assembly ever convened in British America—which met at Jamestown 1619, June 29. His early education was personally directed by his father and supplemented by a collegiate preparatory course. When he was 14 years old his father died, leaving a death-bed injunction that Thomas should complete his studies in William and Mary College. He accordingly entered the college 1760, graduated 1762, began studying law with George Wythe 1763, and was admitted to the bar 1767. During the next 8 years he applied himself closely to his profession, in which he was remarkably successful; took the full management of his father's estate; was chosen justice of the peace and vestryman in succession to his father; increased the family estate from 1,900 to 5,000 acres; married Martha Skelton, the youthful widowed daughter of John Wayles (1772, Jan. 1), whose patrimony doubled 'the ease of his circumstances;' was chosen to represent his county in the house of burgesses (1769), where he signed the non-importation agreement and introduced a bill authorizing owners of slaves to set them free if they desired; was appointed by the house of burgesses (1773) a member of the committee on correspondence with other colonies; prepared the draught of instructions for the Virginia delegates to the congress in Philadelphia in Sep., 1774; and built and occupied his Monticello mansion. His patriotic labors may be said to have begun in 1765, when he heard Patrick Henry deliver his memorable speech in the Virginia legislature after the passage of the Stamp Act. Though a student his ardor was fired by Henry's burning and defiant words, and in after life he frequently recalled the inspirations of that hour. He made himself one of the best informed men of the day, was naturally studious and observing, was an attractive speaker, and as a writer was remarkably quick, comprehensive, and trenchant. Possessing the qualities requisite for a man active in momentous public affairs, and having gained the confidence and esteem of the citizens of his colony, he naturally became prominent in the swift public movements of the day, and was transformed into a busy publicist and intelligent statesman.

In 1775, Mar., he was a member of the convention called to consider the course that Virginia should take in the struggle that then seemed inevitable; and which, after Patrick Henry's peroration 'We must fight!' agreed that Virginia should immediately be armed, on a plan arranged by a committee of which Henry, Washington, Richard Henry Lee, and Jefferson were appointed members. The convention also agreed that if a vacancy occurred in the Virginia delegation to the Philadelphia congress, Jefferson should fill it; and it was through the emergency thus provided for that he took his seat as a member of the continental congress June 21, the day that



JEFFERSON.

news of the battle of Bunker Hill reached Philadelphia, and that Washington left the city to take command of the army at Cambridge. Jefferson bore with him to the congress the reply of Virginia to Lord North's proposal, which he had drawn up at the request of his associates in the Richmond convention. This document met warm approbation in the congress, and after he had served on the committee appointed to draw up a declaration of the causes that led the colonists to resort to arms, he was requested to prepare the reply of the congress to North's 'conciliatory proposition.' This he did, retaining much of the substance of the Virginia 'reply.' His draught was adopted by the congress, which adjourned after providing for a second congress to be convened in Philadelphia 1776, May 10. In Nov. an official notification of the rejection of the last petition for the redress of the wrongs complained of was received from England. Jefferson was elected a delegate to the second congress, and Virginia began preparing for war. Five days after the assembly of the congress, Virginia formally instructed her delegates in it to propose a declaration of the independence of the colonies. Richard Henry Lee, one of the delegates, in obedience to the instruction moved (June 7) that independence be declared, and on the motion a committee was appointed (June 10) to prepare the draft of the declaration, consisting of Jefferson, Benjamin Franklin, John Adams, Roger Sherman, and Robert R. Livingston. Jefferson was 'unanimously pressed' by his associates on the committee to prepare the declaration, and after he had completed it, Franklin and Adams suggested a few verbal changes, and the committee then approved and transmitted it to the congress June 28. July 2 Lee's motion to declare the colonies independent of Great Britain was taken up and adopted, and the committee's draught of the form of declaration was then presented. The debate on the document lasted nearly three days, the draught was thoroughly and severely revised, many additions, suppressions, and amendments were made, and after it had been powerfully opposed and supported by the members, it was adopted late on Thursday afternoon, July 4. A few days afterwards Jefferson was appointed a member of the committee that devised the seal and adopted the motto *E Pluribus Unum* for the new nation, and then resigned his seat to look after neglected private matters and to aid in changing the laws of Virginia to more perfect harmony with the spirit of the great declaration.

In 1776, Sep., he resumed his seat in the house of delegates of Virginia, and was engaged in formulating plans for the future govt. of the state when (Oct. 8) he was informed by a special messenger that the congress had elected him joint commissioner with Benjamin Franklin and Silas Deane to negotiate treaties of commerce and alliance with France. Constrained by a sense

of duty to his family and state, he declined the office, and applied himself to the revision of the laws of the commonwealth as chairman of a committee appointed by the legislature for the purpose. This task occupied nearly three years, and to Jefferson were particularly assigned the common law and statutes extending to the 4th of James I. Among others he formulated four bills for legislative action, which he considered as 'forming a system by which every fibre would be eradicated of ancient or future aristocracy.' They were for (1) the repeal of the laws of entail; (2) the abolition of primogeniture and for equal partition of inheritances; (3) the restoration of the rights of conscience and relief of the people from taxation for the support of a religion not theirs (known as the bill for establishing religious freedom); (4) the establishment of a system of general education. The social fabric of Virginia at the time was such as to make it a matter of extreme boldness for any one to suggest such radical overturnings of ancient laws and customs as these bills proposed. That they should excite intense opposition was natural; yet the first two—the severest socially of all—were adopted, the third was not disposed of till 1786, and the apparently harmless fourth was at once rejected. Jefferson appreciated the fact that the legislature for the first time had the power of enacting laws for the commonwealth that were not subjec to approval or change by any sovereign or privy council, and sought to free the new-born republicanism from all possible 'fibres of aristocracy.' He went so far as to propose bills for the introduction of trial by jury into the courts of chancery, and to provide for the gradual emancipation of the slaves; but, though these were defeated, he secured the adoption of another, strange to say, without opposition, forbidding the further importation of slaves into the state. He secured also the transfer of the capital from Williamsburg to Richmond.

In 1779, Jan., the legislature elected him governor of Virginia to succeed Patrick Henry, whose third term expired June 1; and between these dates he employed himself in striving to ameliorate the condition of the British and Hessian prisoners of war of Burgoyne's army, encamped near Monticello. He assumed the office at a most critical period in the revolutionary struggle, and at a time particularly depressing and threatening to his state. The general campaign of the Americans had recently been discouraging. Washington had been foiled in his attempts to drive the British out of the north, and they, appreciating the fact, had decided to extend their field of operations into the south. Virginia had made many and costly sacrifices to advance the cause. And now, with nearly 10,000 of the flower of her citizenship in Washington's army, with her long lines of sea-coast and river-bank without the means of effectual resistance to a hostile fleet, and with her various resources taxed

almost beyond the means of her people, the prospect of her territory becoming the theatre of the new campaign was dismal in the extreme. Jefferson applied himself with vigor and promptness to the serious duty that confronted him. While providing for the troops with Washington, he hastened large supplies to Gen. Gates then in the south, supported Gen. George Rogers Clarke in his attempt to hold in subjection the Indians on the w. boundary of Virginia, and kept vigilant guard over the British and Hessian prisoners within the state. The defeat of Gates at Camden and the loss of the vast stores of material there collected was the first misfortune of Jefferson's administration. Soon afterward the British under Gens. Leslie and Arnold took possession of Hampton and Portsmouth. Arnold ascended the James river with a fleet, entered Richmond 1781, Jan. 5, and was ravaging and burning the place, when he became alarmed at the preparations for resistance, and returning to his fleet, made his escape down the river, having held the city less than one day. Within 5 days from Jefferson's summons to the co. militia, he started in pursuit of Arnold with 2,500 troops, and his force hourly increased. To a fortunate change in the wind which expedited the seaward flight of his fleet, Arnold owed his escape from destruction. Another British force under Gen. Phillips sailed up the James and threatened Richmond in Apr., but was withdrawn to aid Cornwallis in his efforts to capture Lafayette (who eluded him) and to capture or disperse the legislature, then adjourned to Charlottesville. A body of cavalry under Tarleton captured Jefferson's Monticello estate, but spared it in consideration of his kindness to the British prisoners encamped near by. Tarleton was ambitious to capture Jefferson, and very nearly did so. Incensed at his failure, he rejoined Cornwallis, and the two first occupied and then wantonly destroyed Jefferson's Elk Hill estate. The successes of the British in Virginia induced many persons to arraign the governor and state officials for inefficient administration, though it is difficult to believe that Jefferson or any other man could have done more to oppose the enemy with the very limited means at command. Near the close of his term Jefferson acquiesced in the belief of many that the situation demanded a strong military man at the head of the state govt. and declined renomination. Jefferson resumed his seat in the legislature; the surrender of Cornwallis 1781, Oct. 17, dispelled the great gloom that overhung Virginia; and when he rose in his place in the legislature and stated his willingness to answer any charges against his official conduct, the response was the introduction and passage without an opposing vote of a resolution tendering him the thanks of the general assembly for his administration, and expressing the desire of that body in thus publicly avowing their opinion 'to obviate and to remove all unmerited censure.'

In the autumn of 1782, while grieving over the death of his wife, Jefferson was unanimously elected by the congress one of the plenipotentiaries to negotiate a treaty of peace with England, but before he was ready to sail, news was received that the preliminaries had already been agreed to. In 1783, June, he was re-elected member of the congress. On taking his seat in Nov. he was appointed chairman of the committee to which was referred the definitive treaty of peace, and in that capacity reported it to the congress. He was also chairman of the committee on currency, and proposed and secured the adoption of the present system of coinage. At this session he prepared a plan for the temporary govt. of the w. territory, which Virginia had ceded to the federal government 1780, in which this memorable clause was embodied, 'that after the year 1800 of the Christian era there shall be neither slavery nor involuntary servitude in any of the said states (i.e., those created out of the territory), otherwise than in punishment of crimes whereof the party shall be duly convicted to have been personally guilty.' His plan, with this clause stricken out, was adopted by the congress. The Society of the Cincinnati, now looked upon as a highly honorable and patriotic association of officers of the revolutionary army and their descendants, was formed at this time, 1783, with Washington as its head. Jefferson like many, if not most, of the intelligent citizens of different states, was antagonistic to the movement, which aroused great 'anguish of mind' in them, for it was thought calculated to overthrow the principles expressed in the declaration of independence and to establish a hereditary aristocracy. 1784, May 7, he was again elected by the congress a plenipotentiary to negotiate commercial treaties with foreign powers in association with Franklin and Adams, and made his residence in Paris, where he published his *Notes on Virginia*. It was at this time that he advocated in his correspondence the establishment of 'a little navy,' as a necessity arising from the prospective growth of the nation as a power in commerce; for 'weakness,' he argued, 'provokes insult and injury,' while power 'to punish often prevents them,' and thus promotes peace. In 1785, Jan., Franklin secured his much sought relief from the French mission, and May 2 Jefferson received his commission as sole minister-plenipotentiary to the king of France. During his residence abroad the Va. legislature adopted the *Freedom of Religion* bill, which he had introduced 1776. He proved himself an able sagacious, and popular representative; ever eager to benefit his country, her people and institutions by whatever he could see, learn, or purchase in Germany, Italy, or the French Provinces. His futile efforts to secure the release of American captives in Algiers without paying the dey enormous ransoms, doubtless inspired the order that led to the vindication of American rights in the

Mediterranean, and rendered that sea as safe to commerce as the English Channel, after he had become pres. of the United States. In 1789, he received a leave of absence for six months, and returned to Virginia for brief rest. The day he landed at Norfolk he read a newspaper announcement that Pres. Washington had appointed him sec. of state in the first cabinet of the new govt., and was formally welcomed by a committee of the Virginia legislature with Patrick Henry at its head. He entered on the duties of his new office in New York, 1790, Mar. 22. He was at once placed on familiar terms with the social life, but he says that he could not describe 'the wonder and mortification with which the table conversation' filled him. 'Politics,' he said, 'were the chief topic, and a preference of kingly over republican government was evidently the favorite sentiment.' It should be remembered that New York was the stronghold of the royalists in America, and there were more of them there than in any other colony. His cabinet office soon became irksome and perplexing. He had given his sympathy to the school of politics in course of development in France during his residence there, and was opposed to the fundamental features of the British constitution. He advocated state sovereignty and decentralization, believed in the 'sufficiency of human reason for the care of human affairs,' held 'the will of the majority to be the natural law of every Society, and the only sure guardian of the rights of man,' and declared that while the general reason of Society might sometimes err, its errors would be honest, solitary, and short-lived, and that the people would be safe with the 'general reason of Society' even in its deviations, 'for it soon returns again to the right way.' In opposition to these principles, Alexander Hamilton and his followers believed the republican form of govt. to be a temporary expedient, and favored the strongest centralization of power after the manner of the British govt. The disagreements of these cabinet officers extended almost to every matter of public concern, and as new subjects of discussion were being constantly brought up, the divergence grew wider and deeper and finally personal in character. Both officers sought to resign, but Washington succeeded in placating each without offending the other, and kept them in service till 1794, Jan. 1, when he accepted Jefferson's resignation. Jefferson then returned to Virginia in the belief that he had closed his public career, and applied himself to the care of his estates. During the spring and summer, the friction in Washington's cabinet increased in spite of the excitement over the 'whisky insurrection' in Penn., 1794, and on the suppression of that outbreak Hamilton resigned. Washington immediately invited Jefferson to resume the office of sec. of state, but he declined with the declaration that he would never again 'engage in anything public.' In 1796 however, on Wash-

ington's refusal of a third presidential term, Jefferson became a candidate for the succession, and failed by only three electoral votes. Being the next highest candidate to John Adams, the law then in force made him vice-pres. of the United States. Before entering on the duties of his office, he began compiling for his own guidance as pres. of the senate the manual of parliamentary practice that bears his name, and is still the popular basis of conduct of the leading American deliberative assemblies. 1797, he took no part in the administration of the govt., but was active in endeavors to influence the public mind, especially against the Hamilton policy. Holding that the alien and sedition laws were unconstitutional and subversive of human rights, he drew up the celebrated 'Kentucky resolutions' of 1798, and steadfastly opposed the war feeling against France that had been heightened by the war message of President Adams 1797.

The presidential election 1800 was a surprise. The electoral votes for Jefferson and Burr were the same. Adams was defeated, the decision was made by the house of representatives, and Jefferson became president of the United States with Aaron Burr as vice-president. In his brief inaugural message, Jefferson endeavored to conciliate the political factions, and in selecting his cabinet advisers he made such a wise choice that the cabinet was preserved in complete harmony through both his terms. His early administration was characterized by innovations on the old order of things, in keeping with his life-long declarations. He pardoned every person restrained of his liberty under the alien and sedition law; refused to remove public office-holders belonging to the opposite (federalist) party excepting for official misconduct or 'active and bitter opposition to the order of things which the public will had established;' abolished the semi-royal etiquette that prevailed at the seat of govt.; prohibited the weekly levees at the White House; established the rule that before he would pardon a criminal the judges who had tried him should sign the petition; refused to accept any present while in office or any attention while travelling that would not have been his due as a private citizen; and conformed his personal habits and manners to the line of simplicity that threaded his whole republicanizing policy. Of the public events of his first administration, the purchase of the vast Louisiana territory from France for $15,000,000, with the assumption by the U. S. government of all just claims against the territory, was the greatest. The success of the naval expedition which he dispatched to punish the Barbary pirates and put an end to the exactions of tribute by the dey of Algiers, not only freed the Mediterranean from a long-standing menace to the world's commerce, but added to the popularity of the administration at home and to the respect for the nation abroad.

In 1804 he was renominated for president by the republicans, and elected by a greatly increased majority with George Clinton as vice-president. He reappointed his first cabinet, and entered on an administration more exciting than the first, yet productive of much internal improvement. The first important event was the action growing out of Andrew Jackson's warning of Jefferson against the mysterious movements and designs of Aaron Burr. Jefferson reached the conclusion that Burr was guilty of treason in plotting against the govt., and unsuccessfully attempted to convict him on the charge. Among other outgrowths of this action was the unfortunate estrangement of Jefferson and Jackson, the latter declaring that Burr could not be convicted of the charge and publicly denouncing Jefferson as a persecutor. During this term the country was plunged into excitement by the loss of its foreign trade through its neutrality in the war between Great Britain and France, the impressment of American sailors by British naval officers, the embargo laid on American merchantmen by the congress, and the legislation and diplomatic correspondence occasioned by the trying situation. A threatened war with both Great Britain and Spain was averted; and Jefferson, recommending the congress to suspend commercial intercourse with Great Britain and France while belligerents, had in view the introduction between nations of 'another umpire than arms,' the umpire now universally respected as arbitration. In domestic affairs, the w. territories were systematically explored by Capts. Lewis and Clarke; the national debt was largely reduced and taxes in proportion; the militia was reorganized; several important sea-ports were fortified; and a large number of Indian titles were extinguished by purchase. In 1809, Mar., after a public service nearly continuous through 44 years, Jefferson retired to private life at Monticello in seriously embarrassed financial circumstances, a result of his intense application to the public weal. In 1814 he was compelled to sell his splendid private library, which was bought by the federal government, and later he had to part with his beloved Monticello estate to satisfy financial obligations. He applied his declining years to the establishment of a system of public education in Virginia, and the reorganization of William and Mary College, which he had had in contemplation since 1779. He superintended every detail of the construction of the new institution, and saw it opened as the University of Virginia, 1825, Mar.; but he did not live to see the accomplishment of his labor in behalf of a common-school system. His health was good till within a few days of his death, and life was spared him to see the opening hours of the 50th anniversary of the adoption of the Declaration of Independence. He was buried on his Monticello estate, and over his grave was placed a stone containing this in-

scription, which he had prepared for the purpose: 'Here was buried Thomas Jefferson, author of the Declaration of Independence, of the Statute of Virginia for Religious Freedom, and Father of the University of Virginia.'

JEF'FERSON CITY: capital of Missouri, co. seat of Cole co., on an eminence on the s. bank of the Missouri river abt. 140 m. from its mouth, and 125 m. from St. Louis, with which it is connected both by the river and the Pacific railroad. The elevated site commands a fine view to the north. The city is well built, has good public schools, and is the seat of a Prot. Episc. College; and of Lincoln Normal Institute, a state institution for education of colored young men and women. In early days it had a brisk trade with the hunters and trappers, and overland immigrants to California and Utah. The city has a state-house, state library of 50,000 vols., governor's residence, state penitentiary, etc. Pop. (1910) 11,850.

JEF'FERSONVILLE: city, cap. of Clarke co., Ind.; on the Ohio river, and the O. and Miss. and J. Madison and Indianapolis railroads; 108 m. s. of Indianapolis, 126 m. w. of Cincinnati. It is on high ground at the head of the falls of the Ohio river; is opposite Louisville, Ky., with which it is connected by one of the finest and longest iron railroad bridges in the United States; commands a beautiful panorama of natural scenery, including the river, here a m. wide and containing several pretty islands, the falls (26 ft. in 2 m.), and the city of Louisville; has valuable water-power and shipping facilities; contains numerous churches, high and grammar schools, banks, gas, water, and electric-light plants, the southern state prison, and an extensive U. S. government depot of supplies; and does a large business in steamboat, locomotive, and railroad car building, general machinery, and flour. Jeffersonville is the site of old Fort Finney. Pop. (1910) 10,412.

JEFFREY, *jĕf'rĭ*, Francis, Lord: 1773, Oct. 23—1850, Jan. 26: Scottish critic and lawyer. He studied classics, logic, and belles-lettres at Glasgow and Oxford, and law at the univ. of his native city. In 1794, he was called to the bar. Two years before this, he had become a member of the Speculative Soc. (in connection with the univ.). Jeffrey soon became prominent among the members by the keenness and liveliness of his intellect, and the elegance of his literary taste, but his progress at the bar was slow, on account partly of the antipathy which then existed to literary lawyers, and partly of his political opinions. Meanwhile he and several other young men in Edinburgh, ambitious of finding a wider outlet for their talent than discussions in the Speculative Soc. or the practice of the bar afforded, conceived the idea of starting a critical journal. The first proposer of the scheme was the Rev. Sydney Smith. The

result was the establishment of the *Edinburgh Review* (q.v.), of which Jeffrey became editor, retaining the office till 1829. His own contributions were generally the most brilliant and attractive. On ethics, politics, and many of the questions affecting the social well-being of man, he wrote with much clearness, penetration, and force; but he is said to have placed the highest value on his *Treatise on Beauty* (see ÆSTHETICS), a charming melange of criticism, description, and sentiment, but of doubtful philosophic worth. After some years Jeffrey's practice at the bar began to increase, in jury trials he shone to great advantage, particularly in the trials for sedition, 1817–22. In 1830 he became lord advocate for Scotland; and after the passing of the Reform Bill, he was returned to parliament for Edinburgh, which he continued to represent till 1834, when he gladly exchanged the turmoil of party politics for the duties of a judge of the court of session. During the latter years of his life, Jeffrey resided at Craigcrook Castle, in the vicinity of Edinburgh, where he died. As a critic Jeffrey had great fluency in writing, a gift of mockery and ridicule, conventional sentiment, and a keen eye to detect foibles and oddities; but he was deficent in comprehension of principles, and in recognition of the hidden elements of moral or intellectual power. He had fine social gifts and a personal character of the highest integrity. A selection of his Essays, 4 vols., appeared in 1884. See biography of Jeffrey, by his friend, Lord Cockburn (2 vols. 1852); also Carlyle's *Reminiscences* (1882), and Macvey Napier's *Correspondence.*

JEFFREYS, *jĕf'rĭz*, GEORGE, Lord: 1648–1689, April, 19: b. Acton, Denbighshire, Wales: English jurist. He was educated at Shrewsbury, in St. Paul's School, London, and in Westminster School: he was called to the bar 1668, began practicing in the Old Bailey and other inferior London courts, rose rapidly at the bar, and became common sergeant of London 1671. The dissolute habits formed in early youth increased as he grew older; he acquired the coarse and bullying manners of the criminals with whom he had professional dealings; and not only did he become absolutely brutal at the bar, but unscrupulous and overbearing in his other associations. From avowed sympathy with the country party, he sought personal popularity and aggrandizement by affiliating with the Puritans, and at the same time engaged in base intrigues to secure the favor of the court party. He was rewarded by being knighted, and appointed solicitor to the Duke of York 1677, recorder of London 1678, king's sergeant and chief-justice of Chester 1680, baronet 1681, crown counsel against Lord Russell, and chief-justice of the king's bench 1683. He was compelled to kneel before the house of commons and receive a public reprimand for base official conduct.

Afterward he sentenced Algernon Sidney 1683, presided at the trials of Baxter and Oates 1685, was made a peer by James II. 1685, and as head of a commission to try Monmouth's 'rebels' ordered 320 persons hanged and 841 sold into slavery in tropical colonies. After the close of this 'bloody assize' he was appointed lord high chancellor of England 1685, Sep. 28. He prepared to leave the country on the flight of the king, but lingering in a drunken debauch was seized by the mob, and would have been torn to pieces had not the authorities rescued him and placed him in the Tower, where he died four months afterward.

JEHAD, rather JIHAD, n. *jĕ-hăd'* [Ar.]: in the *East*, a war waged by Musselmans against infidels or idolaters; a religious war.

JEHOVAH, n. *jĕ-hō'vă* [Heb. *Yehovah*—from *hâvăh*, to be]: the Hebrew name of the Deity; the eternal and self-existent Being. JEHOVIST, n. *jĕ-hō'vĭst* [see ELOHIST]: one who maintains that the vowel-points of *Jehovah* express the true pronunciation of that word; the writers, or one of them, who is supposed to have introduced the passages of the Old Test. in which the name Jehovah occurs, particularly in the Pentateuch. JEHOVISTIC, a. *jē'hō-vĭs'tĭk*, relating to *Jehovah* as the name of God; denoting certain passages in the Old Test. where *Jehovah* occurs as the name of the Supreme Being.

JEHOVAH, *jė-hō'vah* [Heb. *Yehovah;* more correctly, *Yahve, Yahăveh,* or *Yahăvâh*—or according to Delitzsch and Sayce, *Jahu* or *Jeho* (*Yahu, Yeho*); in poetry, *Yâh;* etymology doubtful, but formerly taken from Heb. *hâvăh,* 'to be']: one of the names of God in the Old Testament. Its meaning—according to the etymology above given—is, 'He that is,' 'the Being;' or, since the word contains all the forms of the past, present, and future tenses, 'the eternal One'—He who was, and is, and is to come. Many have considered it to contain a reference to the future manifestation of God in the Christ and by the Spirit. Jehovah is generally employed to express a different conception of the Deity from that contained in the word *Elohim* (q.v.). The latter appears to be the older term, in use before the Hebrews had attained a national existence; whereas *Jehovah* exclusively seems to denote God as making Himself known to the chosen nation, the Hebrews—the God supreme over all, who, according to Ex. vi. 3, had not 'made Himself known' under this name to the patriarchs before the time of Moses. That Jehovah is specifically God as making Himself known in the line of the Hebrew revelation, is clear from the fact, that the heathen deities never receive this name; they are always spoken of as *Elohim.* Moreover, the altars, the sacrifices, the festivals, the tabernacle, the

temple, the priesthood, and the prophets, all belong emphatically to Jehovah. Gideon shouts, 'The sword of Jehovah and of Gideon,' as a Roman warrior would have invoked the aid of Jupiter. In one sense, the term Jehovah is less broad and universal in its application than Elohim, who, in the first verse of the Bible, appears as the creator of heaven and earth, and who is God over all, irrespective of nations: but in another sense, it clearly indicates an advance in religious conception. For, while *Elohim* is introduced more as an Almighty Creative Power than a 'Being,' Jehovah is God in full personal relation to man—He speaks to his creatures, makes covenants with them, becomes their law-giver, and desires their homage and worship. The Hebrew writers even run their representations of the Divine personality into what seem to us extreme forms of anthropomorphism—Deep reverence for the Deity and the Divine name led the Jewish church to the substitution of Adonai (*Lord*) in the *pronunciation* of Jehovah, the latter being vowelled by the Masoreths like the former.

A very nice and difficult controversy with respect to the authorship and unity of the Pentateuch, has long been carried on among scholars in connection with these two names: see GENESIS; PENTATEUCH.

JEHU, *jē'hū*, general of the army of Joram, king of Israel. The prophet Elisha sent one of the school of the prophets to anoint him king over Israel, and in a sudden revolution Joram was slain and Jehu reigned in his stead. He was the first of a new, the fifth dynasty, and reigned 843–815 B. C. On his accession he massacred all the family of Ahab, including his wretched wife Jezebel, and put the priests of Baal to the sword. In order to obtain possession of the kingdom of Judah he slew Ahaziah the king, and 42 of his family. But his reign was not a prosperous or successful one, and by an invasion of the Assyrians he lost all the territory east of the Jordan. His name has been found on the black obelisk discovered by Layard at Nineveh, and now in the British Museum. This obelisk was set up by Shalmaneser II., and the inscription refers to the tribute paid by Jehu to the Assyrian monarch.

JEHU, n. *jē'hū* [after *Jehu*, mentioned in II Kings ix. 20]: one who is famous as a coachman or driver; one who drives quickly and somewhat recklessly.

JEJEEBHOY, or JEEJEEBHOY, *jē-jēb-hoy'*, Sir JAMSETJEE: Parsee merchant-prince and philanthropist: 1783, July 15—1859, Apr. 15; b. Bombay, of poor parents. He early showed great aptitude for mercantile pursuits, and his father-in-law, Framjee Nusserwanjee, Bombay merchant, took him into partnership. While still young, he visited most of the maritime countries of Asia, besides Egypt, Syria and England. After he

had become chief partner in his father-in-law's firm, the wealth of which rapidly and prodigiously increased, Jejeebhoy kept his eye on the progress of political events in Europe; and when peace was restored there after the fall of Napoleon, the Indian trade was so much benefited that, 1814–19, the value of the imports from Europe rose from £870,000 to £3,052,000—in which increase, we are informed, 'the house of Sir Jejeebhoy and his father-in-law enormously participated.' When he had completed his 20th year of business (1820), he had amassed an immense fortune, and was universally acknowledged the first merchant in the East. He now began to show, on a magnificent scale, his liberal and philanthropic spirit. His contribution to the Jamsetjee Jejeebhoy Hospital was 160,500 rupees; his endowment of the Parsee Benevolent Institution, 440,000 rupees; the Mahim Causeway, built by him, cost 150,500 rupees; the Dhurumsalla, or Poor Asylum, 150,000 rupees; the water-works constructed by him at Poona cost 180,000 rupees; and the endowment of the Jamsetjee School of Industrial Arts, 100,000 rupees. Altogther, between 1822 and 1858, Sir J. spent 'upwards of a quarter of a million pounds sterling in founding, endowing, or supporting undertakings of a purely benevolent character.' Parsee and Christian, Hindu and Mussulman, were alike the objects of his splendid beneficence. At length the fame of his munificence reached the ears of Queen Victoria, who conferred on him the honor of knighthood. Other honors followed; and 1857 he was made a baronet of the United Kingdom. He was succeeded in the baronetcy by his eldest son, Cursetjee Jamsetjee Jejeebhoy, who, in accordance with his father's will, took his father's name. He again was succeeded 1877 by his son Manekjee, who also assumed the name of the first baronet.

JEJUNE, a. *jē-jūn'* [L. *jējūnŭs*, fasting, empty, dry]: empty; wanting; vacant; barren; dry; hungry; uninteresting. JEJUNE'LY, ad. *-lĭ*. JEJUNE'NESS, n. emptiness; barrenness; poverty. JEJU'NUM, n. *-jū'nŭm*, a part of the small intestines between the duodenum and the ileum, so called because always found empty (see ILEUM). JEJUNE NARRATIVE, an uninteresting, tedious narrative.

JELLACHICH DE BUZIM, *yĕl'lâ-chĭch dĕh bô'zĭm*, JOSEPH, Baron: 1801–1859, June; b. Peterwardein: Austrian general, and Ban of Croatia. His father, descendant of an old Croatian family, was a general in the Austrian service, and attained celebrity in the Turkish wars, and in those of the French Revolution. The baron was early employed in military service on the Turkish frontier, and distinguished himself by his courage and skill. He succeeded in winning in a high degree the confidence of the Croatians, so that 1848 the court of Vienna was glad to appoint him Ban of Croatia, in

order to secure the support of the Slavonian Croatians against the Magyars of Hungary, and he was very active in the suppression of the Hungarian rebellion. J. died at Agram. He had a taste and some gift for poetry: a collection of his poems was published, Vienna, 1850.

JELLIFFE, Smith Ely, American physician: b. Brooklyn, N. Y., 1866, Oct. 27. He was graduated from the Brooklyn Polytechnic Institute in 1886, and in 1889 the degree of M. D. was conferred upon him at Columbia University. He is instructor in Materia Medica in Columbia University and has done much original work in botany, pharmacognosy, therapeutics, and nervous and mental diseases. He has published numerous writings on those subjects. Some of his more important works being *The Flora of Long Island;* a text-book of botany; a text-book of pharmacognosy; and a text-book of nervous and mental diseases; as well as translations from French and German writers on nervous and mental diseases. He is editor of the *Medical News,* and managing editor of the *Journal of Nervous and Mental Diseases* and is also medical editor of the *Encyclopedia Americana.*

JELLOPED, a. *jĕl'ŏpt:* in *her.,* a term applied to the comb and gills of a cock when they are of a tincture different from the body.

JELLY, n. *jĕl'lĭ* [F. *gelée,* the juice of meat or fruit which congeals on cooling—from *geler,* to freeze—from L. *gelārĕ,* to freeze—from *gĕlū,* icy-coldness, frost]: the strained liquid or juice of fruit after being boiled with sugar until it becomes a stiffened mass when cooled; the stiffened juice of boiled meat, sweetened and flavored, as calf's foot jelly; some gluey substance which is semi-transparent. Jellied, a. *jĕl'lĭd,* brought to the consistence of jelly. Jelly-fish, a popular name of the medusæ, from their resemblance to a mass of jelly: see Acalephæ.

JE'LUM. See Jhelum.

JEMIDAR, n. *jĕm'ĭ-dâr* [Hind. *jama-dar,* the keeper of a wardrobe, a musketeer]: a native officer in the Indian army ranking as a lieutenant.

JEMMY. See Jimmy.

JENA, *jĕn'a,* Ger. *yā'nâ:* town in the grand-duchy of Saxe-Weimar-Eisenach, former cap. of the duchy of Saxe-Jena, beautifully situated in a romantic valley at the confluence of the Leutra with the Saale. It derives celebrity chiefly from its university, but also from the great battle fought here between the French and the Prussians. Pop. 15,500.

The *University of Jena* was founded about 1547 by Elector John Frederick of Saxony, who intended it to supply the place of Wittenberg as a great seat of learning and of evangelical doctrine. It soon acquired high reputa-

tion. The imperial authorization was obtained, after some delay and difficulty, 1558. It is the university of the minor Saxon states, and is supported by contributions from them all. Its library contains more than 200,000 volumes. The most flourishing period of the university was that of Duke Karl August, zealous patron of art and science, 1787–1806. To have attained academic honors in J. used to be no small recommendation to employment in other German universities, and many of the most distinguished ornaments of other universities have been students of this. Some of its professors were among the first and most successful supporters of the philosophy of Kant. Fichte founded a new school of philosophy here 1794, and the names of Schelling and Hegel are connected with Jena. The brothers Schlegel, Voss, Fries, Krause, and Oken have added to its celebrity in literature and science. The faculty of medicine, as well as those of theology and law, has reckoned many distinguished names. The most eminent theologians in recent times have belonged to the liberal school. There are in all about 100 professors and lecturers, and about 800 students. The peculiar characteristics of German student life have always had full development here. The *Jenaische Literaturzeitung*, under the auspices of the university, is one of the most valuable literary and scientific journals.

*The Battle of Jena* was fought in the neighborhood of the town, 1806, Oct. 14. The Prussian army, about 70,000 men, was under the command of the Prince of Hohenlohe; while the French, commanded by Napoleon, amounted to 90,000. The former were completely defeated. On the same day, Davout defeated the aged Duke of Brunswick at Auerstädt, with 30,000 French against 60,000 Prussians, and these two battles decided for a number of years the fate of the Prussian kingdom and of n. Germany. The loss of the Prussians on that eventful day and in the conflicts of the preceding days amounted to 50,000 killed, wounded, and prisoners, besides the loss sustained by the Saxons, their allies. The French reported their loss 7,000, including 270 officers.

JENCKES, *jĕnks*, JOSEPH: 1602–1683, Mar. 16; b. Colbrooke, England; inventor. He removed from Hammersmith to the Saugus river, Mass. 1642, to superintend for an English company the development of the iron-ore, then recently discovered in the vicinity of that river. He was a master-mechanic, and is credited with having established the first iron foundry and forge in the American colonies, making the first molds, casting the first household and farm utensils, manufacturing the first machinery, establishing the first mint for coining money, cutting the dies for the first coin (the 'Masatusets' piece), building the first fire-engine in the country, and drawing up the first law for patenting inventions. He is believed to have been the first per-

son of his name in America, the spelling of which has since been changed to Jenks.

JEN'GHIS KHAN. See GENGHIS KHAN.

JENISE'I. See YENISEI.

JENKINS, *jĕnk'ĭnz*, CHARLES JONES, American jurist and statesman: b. Beaufort County, S. C., 1805, Jan. 6; d. Summerville, Ga., 1883, June 14. He was graduated from Union College, Schenectady, N. Y., in 1824, and after the study of law began practice in Augusta, Ga. He was a member of the Georgia legislature in 1830 and after a short service as attorney-general of the State was a member of the legislature 1836–50, and a leader of his party there. He was State senator 1856–60, and was a judge of the Georgia supreme court 1860–5. He became provisional governor of his State in 1865, holding office until 1868, and presided over the Constitutional Convention of 1877. Consult: Jones, *Life of C. J. Jenkins* (1884).

JENKINS, *jĕnk'ĭnz*, EDWARD: author: b. Bangalore, India, 1838. He was educated at the High School and McGill College, Montreal, and at the Univ. at Penn., was admitted to the bar in London, England, 1864, and practiced till 1873, when he entered political life as an ultra-liberal. He was appointed agent-gen. for Canada 1874, represented Dundee in parliament 1874–80, and was defeated in the city of Edinburgh 1881, Jan. He contested Dundee in 1885 and 1896 as a Conservative. He is the author of *Ginx's Baby* (1870); *Lord Bantam; The Coolie* (1871); *The Colonies an Imperial Unity* (1871); *Little Hodge; The Devil's Chain; Lutchmee and Dilloo; The Captain's Cabin; Fatal Days* (1874); *A Paladin of Romance; Contemporary Manners* (1882); *Jobson's Enemies* (1883); *A Week of Passion; State Emigration; Statesmanship; Barney Geoghegan, M. P.; Imperial Federation; Pantalas;* etc., beside a number of political essays and review contributions.

JENKINS, JOHN STILWELL, American biographer: b. Albany, N. Y., 1818, Feb. 15; d. Weedsport, N. Y., 1852, Sept. 20. He was a lawyer by profession, and at one period edited the Cayuga *Times*. Among his works are: *Generals of the Last War with Great Britain* (1841); an abridgment of Hammond's *Political History of New York* (1846); *Alice Howard* (1846); *Life of Silas Wright* (1847); *History of the Mexican War* (1848); *Heroines of History* (1853).

JENK'INS, THORNTON ALEXANDER: naval officer: b. Orange co., Va., 1811, Dec. 11; d. 1893, Aug. 9. He received a collegiate education, was appointed midshipman in the U. S. navy 1828, Nov. 1, promoted passed midshipman 1834, lieut. 1839, commander 1855, capt. 1862, commodore 1866, rear-admiral 1870, Aug. 15, retired 1873, Dec. 11. He served on the e. coast of

Mexico through the Mexican war, commanded a hydrographical party of the U. S. coast survey 1848–51, drafted the law under which the present American lighthouse system was established and is maintained, aided in saving the forts at Key West and Dry Tortugas from capture by the Confederates just before the civil war was opened, was fleet-capt. and chief of staff of Farragut's squadron in the Miss. river, commanded the *Hartford* at the passage of the Port Hudson and Grand Gulf batteries, was chief naval officer at the surrender of Port Hudson 1863, July, and commanded the *Richmond* and the 2d div. of Farragut's fleet blockading Mobile 1863–5. After the close of the war he was chief of the bureau of navigation, resumed the office of sec. of the lighthouse board (previously held 1850–8, 1860–2) 1869–71, and commanded the Asiatic squadron 1871–3.

JENKS, Edward, English publicist: b. Clapham, Surrey, 1861, Feb. 20. He was educated at Dulwich College and Cambridge University, and was dean of the faculty of law in the University of Melbourne 1889–92, and Queen Victoria professor of law in University College, Liverpool, 1892–6. He was reader in English law at Oxford, 1896–1903, is now principal and director of legal studies of the law society, and widely known as a writer on English law, his published works comprising: *Constitutional Experiments of the Commonwealth* (1891); *The Doctrine of Consideration in English Law* (1893); *The Government of Victoria* (*Australia*) (1893); *History of the Australasian Colonies* (2d ed. 1896); *Outlines of English Local Government* (1895); *Law and Politics in Middle Ages* (1897); *A Short History of Politics* (2d ed. 1900); *Edward I.* (1902); *Parliamentary England* 1660–1832 (1903).

JENKS, Jeremiah Whipple, American political economist: b. St. Clair, Mich., 1856, Sept. 2. He was graduated from the University of Michigan in 1878, and subsequently studied in Germany, at the University of Halle. He then studied law and was admitted to the Michigan bar. In 1886 he became professor of Greek, Latin, and German in Mount Morris College, Ill.; in 1886–9 was professor of political science and English literature at Knox College, Galesburg, Ill.; in 1889–91 professor of political economy and social science at Indiana University; and in 1891 became professor of political economy and politics at Cornell University. In 1899–1901 he was expert agent for the United States Industrial Commission on investigation of trusts and industrial combinations, and was also expert for the Department of Labor on the same subject. In 1902 he was commissioner of the United States War Department to the Philippines and other Oriental nations to investigate the condition of labor and other economic subjects.

In 1903 he went to Mexico to consult with the minister of finance in regard to a change of the financial system. He has written: *Henry C. Carey als National-ökonom* (1885); *The Trust Problem* (1900); *Trusts and Industrial Combinations* (1900); a part of the report of the Industrial Commission; and *Report on Certain Eeonomic Questions in the English and Dutch Colonies in the Orient* (1902); besides many magazine articles. He is recognized as one of the foremost authorities on the trust question, and his writings are marked by scholarly and accurate investigation, combined with unusual simplicity and clearness of statement.

JENKS, Tudor, American editor and author: b. Brooklyn, N. Y., 1857, May 7. He was graduated from Yale in 1878, from Columbia Law School in 1880, studied art in Paris in 1880–1, practised law in New York in 1881–7, and 1887–1902 was a member of the staff of the *St. Nicholas Magazine*. His writings include many magazine contributions in prose and verse, and *The Century World's Fair Book* (1893); *Imaginations, or Truthless Tales* (1894); *The Boys' Book of Explorations* (1900); *Galopoff, the Talking Pony* (1901); *Gypsy* (1902); *Defense of the Castle* (1903); *Making a Start* (1903); *A Little Rough Rider* (1904); *In the Days of Chaucer* (1904); *Shakespeare* (1904); *Milton* (1905); *Captain John Smith* (1904); *Captain Myles Standish* (1905); etc.

JENNER, *jĕn'ẽr*, Edward, M.D.: discoverer of vaccination: 1749, May 17—1823, Jan. 26; b. Berkeley, Gloucestershire, England; third son of the Rev. Stephen Jenner, vicar of the parish, and rector of Rockhampton. His scholastic education being finished, he was removed to Sodbury, near Bristol, to be instructed in the elements of surgery and pharmacy by Mr. Ludlow, an eminent surgeon there; and on the expiration of his term he went to London, in the 21st year of his age, to prosecute professional studies under the direction and instruction of the celebrated John Hunter (q.v.), in whose family he resided for two years. Under Hunter's superintendence, he became an expert anatomist, a sound pathologist, a careful experimenter, and a good naturalist. The influence of the master exerted a lasting effect on the pupil; and Hunter's letters, which Jenner carefully preserved, evince affectionate feeling and community of tastes. On leaving London Jenner settled at Berkeley, where his sound professional knowledge and kindly disposition soon brought a large practice. In 1788, his well-known memoir, *On the Natural History of the Cuckoo*, appeared in the Transactions of the Royal Soc., containing the results of investigations begun at the request of Hunter. A few years afterward the fatigues of general practice having become irksome to him, he resolved to confine himself to medicine, and with

that view he obtained the degree of M.D. from the Univ. of St. Andrews.

The discovery of the prophylactic power of vaccination, by which the name of Jenner has become immortalized, was the result of a prolonged series of observations and experiments. His attention, while he was yet a youth, was forcibly attracted to the nature of the cow-pox in the following manner. He was pursuing his professional education in the house of his master at Sodbury, when a young country-woman came to seek advice. The subject of small-pox being mentioned in her presence, she observed: 'I cannot take that disease, for I have had cow-pox.' This was before 1770. It was not till 1775 that, after his return to Gloucestershire, he had an opportunity of examining into the truth of the traditions respecting cow-pox; and it was five years later before he began clearly to see his way to the great discovery that was in store for him. In 1780, May, while riding with his friend Edward Gardner, on the road between Gloucester and Bristol, 'he went over the natural history of cow-pox; stated his opinion as to the origin of this affection from the heel of the horse [when suffering from the 'grease']; specified the different sorts of disease which attacked the milkers when they handled infected cows; dwelt upon that variety which afforded protection against small-pox; and with deep and anxious emotion, mentioned his hope of being able to propagate that variety from one human being to another, till he had disseminated the practice all over the globe, to the total extinction of small-pox.'—Baron's *Life of Jenner*, p. 128. Many investigations regarding the different varieties of cow-pox, etc., delayed the actual discovery 16 years, when at length the crowning experiment on James Phipps (see INOCULATION) was made 1796, May 14, and Jenner's task was virtually accomplished. This experiment was followed by many of the same kind; and 1798 he published his first memoir, *An Inquiry into the Causes and Effects of the Variolæ Vaccinæ*. Although the evidence accumulated by Jenner seemed conclusive, yet the practice met violent opposition until a year had passed, when more than 70 of the principal physicians and surgeons in London signed a declaration of their entire confidence in it. His discovery was soon promulgated thoughout the civilized world. Honors were conferred on him by foreign courts, and he was elected an honorary member of nearly all the learned societies of Europe. Parliament voted him, 1802, a grant of £10,000, and in 1807, a second grant of £20,000; and in the year 1858, a public statue in his honor was erected in the metropolis. His latter days were passed chiefly at Berkeley and Cheltenham, and were occupied in the dissemination and elucidation of his great discovery. He died of apoplexy at Berkeley. Jenner was noted for the benevolence of his disposition, which seems even more

than his scientific enthusiasm to have urged him onward to his beneficent discovery. See SMALLPOX; VACCINATION.

JENNER, KATHERINE LEE RAWLINGS, English novelist: b. Hayle, Cornwall. She was married to Henry Jenner, and has published: *A Western Wildflower* (1882); *In London Town* (1884); *Katharine Blythe* (1886); *An Imperfect Gentleman* (1888); *Love or Money* (1891); *When Fortune Frowns* (1895); *In the Alsatian Mountains.*

JENNER, SIR WILLIAM, English physician: b. Chatham, 1815; d. London, 1898, Dec. 12. He was educated at University College, London, became in 1848 professor of pathological anatomy, and in 1857 of clinical medicine in that institution, and in 1861 physician to the queen. In 1862 he was appointed professor of the principles and practice of medicine in University College; in 1868 was created a baronet, and in 1872 a K.C.B., in recognition of his services during the severe illness of the Prince of Wales, now Edward VII. In 1881 he was elected president of the College of Physicians. He wrote various papers on specific diseases, and was the earliest to establish the difference in kind between typhus and typhoid fevers.

JENNET, n. *jĕn'ĕt* [OF. *genette;* F. *genet,* a Sp. horse: Sp. *ginete,* a horseman, a nag]: a small Spanish horse.

JENNETING, n. *jĕn'nĕt-ĭng* [F. *jeanneton*]: an apple ripe about June; a kind of early apple.

JENNINGS, *jĕn'ĭngz,* WILLIAM: 1701–97; b. England: miser. He was son of an aide-de-camp to the Duke of Marlborough, had William III. for godfather at his baptism, was a page to George I. several years, and, taking up his residence (1722) in a grand unfinished mansion belonging to his father in Suffolk—where he had for near neighbor the equally celebrated miser John Elwes—passed the remainder of his life in accumulating wealth. He never married, dressed shabbily, ate little food and that the commonest, frequented the gambling clubs of London to lend money at enormous interest, and died worth $5,000,000 but intestate, never having had his will executed. Under the law his property passed into chancery, where people of his name in England and the United States have ever since sought to acquire it as heirs.

JENNY, n. *jĕn'nĭ* [by some said to be after *Jenny,* the wife of the inventor, *Arkwright;* by others from *gin,* a corruption of *engine*]: a machine for spinning. *Note.*—JENNY is a familiar proper name applied to things in personification.

JENTACULAR, a. *jĕn-tăk'ū-lėr* [L. *jentācŭlŭm,* a breakfast taken immediately on getting up]: applied to a breakfast taken early in the morning, or immediately

on getting up. PRE-JENTACULAR, applied to what is done early in the morning, as taking a breakfast before getting up.

JENYNS, *jĕn'ĭnz*, SOAME: 1704–1787, Dec. 18; b. London: author. He was educated at Cambridge Univ., elected member of parliament for Cambridgeshire 1742, and afterward for Dunwich and Cambridge; and was a commissioner of the board of trade and plantations 1755–80. He was noted for wealth, wit, and social standing. He published two vols. of poems, *The Art of Dancing* (1727) and *Miscellanies* (1770), a prose work, *Free Inquiry into the Nature and Origin of Evil* (1756) —severely criticised by Dr. Johnson; and his celebrated *View of the Internal Evidence of the Christian Religion* (1776)—widely praised for its literary merits, and considered by many the best argumentative presentation of the subject.

JEOPARD, v. *jĕp'ĕrd* [OF. *jeu parti;* mid. L. *jocus partītŭs*, an even chance, a choice of two alternatives—properly a game in which the chances are even, hence anything uncertain or hazardous—from F. *jeu;* L. *jocus*, game, sport—and F. *parti;* L. *partītŭs*, divided]: to expose to loss or injury; to hazard, imperil, or endanger. JEOP'ARDING, imp. JEOP'ARDED, pp. JEOPARDY, n. *jĕp'ĕr-dĭ*, exposure to loss, injury, or death; hazard; peril; danger; in law, condition of a prisoner when a trial jury has been impanelled and sworn to try his case. If he escape this jeopardy he cannot again be subjected to the same danger, the United States Constitution clearly defining the point that 'No person shall be subject for the same offence to be twice put in jeopardy of life or limb.'—SYN. of 'jeopard': to peril; endanger; hazard; risk; expose.

JEPHSON, *jĕf'sŭn*, ARTHUR JERMY MOUNTENEY, English writer of travels. He commanded a detachment under the explorer, Stanley, in the Emin Pasha relief expedition, was queen's messenger 1895–1901, and has been king's messenger from the latter date. He has published: *Emin Pasha and the Rebellion at the Equator; Stories Told in an African Forest; The Story of a Billiard Ball* (1897).

JEPHTHAH, *jĕf'tha*, in Jewish history one of the judges of Israel (Judges xi., xii.). He was a son of Gilead, and was driven from home by his brothers, but when the Ammonites made war against Israel was summoned to defend his countrymen. Jephthah after trying conciliatory measures without success, put himself at the head of the Israelites, and defeated the enemy. He had made a vow that if he was victorious he would sacrifice to God as a burnt-offering whatever should first come to meet him from his house. He was met by his daughter, his only child, whom he accordingly sacrificed to the Lord (Judges xi. 29, 40). The way in which

the vow was kept has given rise to much controversy, some authors maintaining that Jephthah put his daughter to death; others that he devoted her to perpetual virginity; others that he actually sacrificed her as a burnt-offering, and that, though prohibited by law of Moses, these human sacrifices occasionally took place.

JEP'SON, Edgar, English novelist: b. London, 1864, Nov. 28. He was educated at Oxford and has published: *Sibyl Falcon* (1895); *The Passion for Romance* (1896); *The Keepers of the People* (1898); *On the Edge of the Empire* (1900); *Lady Noggs, Peeress* (1904); *The Sentimental Warrior; The Dictator's Daughter* (1902); *The Admirable Tinker* (1904).

JEQUITINHONHA, *zhā-kē-tēn-yōn'yâ:* river of Brazil, known also as Rio Grande do Belmonte; rising in the province of Minas Geraes, 9 m. w. of the town of Serro, flowing first through the province, then n.e. into the province of Bahia, and after a course of 750 m. falling into the Atlantic near the town of Belmonte, lat. 15° 50′ s. It drains an area of 19,800 sq. m., flows through a mountainous region in its upper course, provides one of the most magnificent falls in Brazil where it crosses the Minas Geraes and Bahia boundary, widens and grows more shallow in its lower course, and has numerous sand bars at its entrance. The rich products of the two provinces are diverted into the Poassu, one of its arms, thence into the Pardo, and conveyed to Cannavieiras at the mouth of the Pardo, 40 m. n. of Belmonte.

JERASH'. See Gerasa.

JER'BA. See Gerba.

JERBOA, n. *jĕr-bō'ă* [Ar. *yerboa*], (*Dipus*): genus of rodent quadrupeds, of the family *Muridæ,* remarkable for great length of the hind-legs, and kangaroo-like power of jumping. The fore-legs are very small, hence the ancient Greek name *dipous* (two-footed). The tail is long, cylindrical, covered with short hair, and tufted at the end. The jerboas are inhabitants of sandy deserts and wide grassy plains in Asia and the e. of Europe, Africa, and Australia; and one genus, *Jaculus*, in N. America. They are burrowing animals, nocturnal, very destructive to grain and other crops, laying up hoards for their winter use. They take prodigious leaps when alarmed; the fore-feet are then not used at all, but by means of the hind-feet and the tail, they leap, though they are small animals, several yards. Their flesh is said to resemble that of the rabbit.—Closely allied to the jerboas are the *Gerbils* (*Gerbillus*), small quadrupeds, also distinguished by great length of hind-legs and power of leaping, inhabitants of the warm and sandy portions of the old world.

JEREED, or Jerid, n. *jĕr-ēd'* [Persian and Turkish]: wooden javelin, about 5 ft. long, used in Persia and Turkey, especially in mock fights.

JEREMIAD, n. *jĕr'ĕ-mī'ăd:* a sad and desponding complaint or lamentation—so called from the propheeies of *Jeremiah*, especially the Book of Lamentations.

JEREMIAH, *jĕr-ė-mī'a* [Heb. *Yirmiyahu*]: Hebrew prophet, son of Hilkiah who was a priest of Anathoth, about three miles n. of Jerusalem. He prophesied under the reigns of Josiah, Jehoahaz, Jehoiakim, Jehoiachin, and Zedekiah B.C. 630–590, and even later. His character and fortunes are clearly discernible in his writings. To him, a man of an emphatically spiritual, truthful, self-sacrificing nature, it was given to predict in the midst of the, both politically and religiously, rotten state of the commonwealth, under the successive weak kings, its speedy destruction. Fearless yet hopeless, he delivers his mournful messages from year to year, and battles with despairing heroism against the inevitable. His life thus became one long martyrdom. We read of his enduring 'reproach and derision daily' (xx. 8); his townsmen of Anathoth threatened to slay him, if he did not stop prophesying woe (xi. 21); his own brethren, the house of his father, 'dealt treacherously' with him (xii. 6); so that his spirit at times failed him. There were two political parties in Judah at this time—in favor of a Chaldæan and of an Egyptian alliance respectively. Like the earlier patriotic prophets, Jeremiah repudiated both at first. The course of events, however, had necessitated a compromise, and the religious party —gradually decreasing in numbers and influence—had declared against Egypt, and in favor of Chaldæa. King Josiah, who belonged to that party, perished at Megiddo, in the valley of Esdraelon, in an attempt to stop the progress of Pharaoh-Necho (B.C. 609). After this, affairs grew worse. The Egyptian party became predominant, and Jeremiah was forced to take a side, and become a partisan as well as a prophet. He speaks of the king of Babylon as God's servant, and prophesies the destruction of the temple. A cry arose from the priesthood and the prophets for his life and he escaped with difficulty (xxvi.). At last came the judgment: the best portion of the people were carried into captivity; and Jeremiah urged his countrymen to wait for the period of deliverance with religious fortitude and patience. A sudden irruption of the Egyptians drove the Chaldæans out of Judah, and Jeremiah was again exposed to persecution, thrown into a pit to die, and rescued only by the kindness of an Egyptian eunuch. The capture of Jerusalem by Nebuchadnezzar rendered the prophet's position more tolerable. Jeremiah had always counselled submission to the Chaldæans. He was even patronized by the conqueror, and offered a home at Babylon, but he preferred to reside among the wretched remnant of the people left in Judah (xl.). Intestine strifes, however, soon drove some to take refuge in Egypt. Jeremiah was

carried off with the exiles, and here he is believed to have died, and his grave was long shown at Cairo. According to others, however, he came back to Judæa. The writings of this prophet, dictated by him to Baruch, have been arranged with little regard to order, and the text is in a state of great confusion, notwithstanding that Jeremiah himself undertook two distinct redactions. They exhibit great tenderness and elegiac beauty of sentiment, but lack the sublime grandeur of Isaiah. He often borrows largely from his poetic predecessors. Several of the Psalms have been attributed to him, especially by modern critics. Hitzig numbers 34, which he believes to be the composition of Jeremiah; but such definiteness is conjectural. There is no reason to doubt that the Lamentations are properly ascribed to him, while the apocryphal work of Jeremiah, mentioned by Jerome (Matth. 27), deserves little notice. Among the numerous commentators are Origen, Jerome, Theodoret, Oecolampadius, Sanctius, Venema, Michaelis, Umbreit, Henderson, Dahler, Knobel, Ewald, Hengstenberg, and Bunsen.

JEREMIAH, Lamentations of, the title given by the Septuagint translators, by the Vulgate and English Bible, to a book of songs and dirges which is placed next to the book of the prophecy of Jeremiah. The book is divided into five chapters each of which contains a complete composition. In I., II. and IV. the death of the Jewish nation is bewailed with the utmost abandonment of grief. The form of each elegy is poetry of the most strictly artificial kind. The metre is that of the Kinah (q.v.), the metre employed in dirges from immemorial time in the east. As if to run down the whole gamut of sorrow each verse begins with a different letter of the Hebrew alphabet, arranged, generally, in the usual order.

The whole work may be thus briefly analyzed. Elegy 1: Lamentation over the city after the people have been swept off into captivity. Help is asked from Jehovah. Elegy 2: The destruction of the city mourned over. Jehovah again called upon as alone able to save. Elegy 3: Sufferings of 'Jehovah's servant,' a personification of the whole pious multitude, described. Elegy 4: Contrast between former gladness and the present misery, which is attributed to national transgression. Elegy 5: A final appeal for help in prayer to Jehovah.

The date and authorship of the Lamentations are matters of dispute. Few modern critics attribute them to Jeremiah. They show traces, however, of that prophet's language and sentiment, but internal evidence is not conclusive. Some think that they are referred to in 2 Chronicles xxxv. 25. Consult: *Commentaries* of Payne Smith; Cheyne; Plumptre; and Lohr, *Die Klagelieder Jeremias* (1894).

JEREMIAH, The Prophecy of, a book of the Old

Testament containing the utterances of that prophet. The writings of Jeremiah, or certain of them, were taken down by his pupil and friend Baruch. They must therefore have been originally spoken without being previously written out, although it is possible that the scribe or secretary took them down at his master's dictation. The roll of Baruch contained all that Jeremiah had spoken for 23 years; probably, therefore, many of the prophecies may have been sketched merely as outlines. The substance of these impassioned appeals is imbued with firm belief in God's unfailing covenant with Israel and with David. Although Jeremiah is not so often quoted by New Testament writers as is Isaiah, yet there is abundant evidence in their writings that they read him, and he is not only a prophet of denunciation and warning but also of Messianic hope and promise. He shows, moreover, an intimate acquaintance with Deuteronomy, the utterances of his prophetic predecessors, and the book of Psalms.

The book seems naturally to be divided into five parts, the first of which contains six discourses, each of the last three introduced by the formula of sanction, 'The word which came to Jeremiah from the Lord.' Each of these discourses includes sketches, outlines or skeletons of different prophecies each by a distinct formula of sanction. Take for instance, the first discourse ( 1 ch. to 20 ch.), the first sketch would be in the first chapter, verses 4 to 10, introduced by the formula, 'The word of the Lord came unto me saying.' There are at least four of these brief sketches in the first chapter.

The second part of the book consists of 15 prophecies, which are fuller and completer than those of the first part, each with its formula of sanction. They include poems, appeals, allegorical object-lessons, historic narratives and one letter. The third part is a connected narrative in classic Hebrew, different in style from that of the first 20 chapters. The fourth part contains poetic invectives against Egypt, Philistia, Moab, Ammon, Edom, Damascus, Hazor, Elam and Babylon. The fifth part is a supplementary, adding details to the description of Jerusalem's downfall.

JEREZ'-DE-LA-FRONTE'RA. See XERES-DE-LA-FRONTERA.

JER-FALCON, or GER-, *jĕr* [Ger. *geier*, a kind of falcon]. See GYR-FALCON; GIER-EAGLE.

JERICHO, n. *jĕr'ĭ-kō:* an anc. town of Palestine. GO TO JERICHO, *lit.*, wait patiently; be in no hurry; stay till you get experience, as applied to the presumption of young persons; though referring to II Sam. x. 4 and 5, the phrase in general terms points to a place at a considerable but indefinite distance where a deficiency or want might be supplied; *now*, used in a slightly contemptuous sense—be off with you; get out of my way

or sight. GONE TO JERICHO, gone no one knows where. ROSE OF JERICHO, see ROSE OF JERICHO.

JERICHO, *jĕr'ĭ-kō:* anciently one of the most flourishing cities of Palestine, two hours' journey w. from the Jordan, six hours n.e. from Jerusalem. Westward from Jericho lies a waste tract of limestone mountains, rising in stages; but the immediate vicinity is well watered and fruitful, yielding dates, raisins, balsam, and honey, yet a favorite abode also, in early times, of poisonous snakes. The capture of Jericho by the Israelites on their first entry into Canaan, its destruction, and the rebuilding of it by Hiel the Bethelite in the reign of Ahab, about B.C. 918, are recorded in Josh. vi.; I Kings xvi. 34. It appears to have been afterward the seat of a school of prophets (II K. ii. 4, etc.). Herod the Great resided in Jericho, and beautified it. It was destroyed in the reign of Vespasian, and rebuilt under Hadrian. In the time of the Crusades, it was repeatedly captured, and at last completely destroyed. At the present day, its place is occupied by a miserable village called Richa, or Ericha, with scarcely 200 inhabitants.

JERK, v. *jĕrk* [Icel. *hrekia;* Scot. *yerk,* to beat: AS. *gicrd,* a rod: W. *terc,* a jerk or jolt]: to thrust out and draw back suddenly; to give a sudden pull or twitch; to move with a start or by starts; to throw with a quick, smart, arrested motion: N. a short sudden thrust or twitch that shocks or starts; a sudden arrested motion tending to throw or hurl. JERK'ING, imp.: N. act of one who jerks. JERKED, pp. *jĕrkt,* twitched; suddenly pushed or thrust. JERK'INGLY, ad. *-ĭng-lĭ,* by jerks. JERK'Y a. *-ĭ,* coming or moving by starts or by unsteady action.

JERK, v. *jĕrk* [Peruvian, *charqui,* prepared dried meat]: to cut and dry beef in the sun after immersion in sea-water; to cut, as beef, into long thin slices, in order to dry them for keeping. JERK'ING, imp. JERKED, pp. *jĕrkt:* ADJ. cut into pieces and dried in the sun, as beef. JERKED BEEF, beef preserved by drying in the sun. It is properly called *charqui,* and, like its name, is of Chilian origin, though now made in large quantities in Monte Video, Buenos Ayres, and other places in S. America, where vast droves of cattle on the prairies are available. The beasts are slaughtered when in good condition, and the fleshy parts are dexterously pared off in such a manner as to resemble a succession of skins being taken from the same animal. These sheets of flesh, rarely more than an inch in thickness, being exposed to the sun, dry before decomposition commences, and in that state can be kept almost any length of time. Sometimes the charqui is dipped into brine, or rubbed with salt, before being dried. It is largely imported to Cuba, where it is called *tasajo,* for feeding the slaves. The manufacture of charqui, or jerked-beef, has been introduced into Australia; and 1862, shipments of it were

made from Victoria to England, but with small success —though it contains all the nutritive matter of animal food, and could be sold for about twopence per pound. But other forms of preserved meat (see PRESERVES) have nearly driven jerked-beef from the market.

JERKIN, n. *jĕr'kĭn* [F. *jargot*, a coarse garment worn by country people: Dut. *jurkken*—from *jurk*, a child's pinafore, a short frock or waistcoat]: a sort of jacket.

JER'KIN-HEAD: form of roof which is half-gable, half-hip: the gable generally goes as high as the ties of the couples, above which the roof is hipped off.

JEROME', King of Westphalia. See BONAPARTE (JÉRÔME).

JEROME' OF PRAGUE: companion of John Huss, whom he surpassed in learning and eloquence, though inferior in judgment and moderation, and moral weight: b. Prague; between 1360 and 70; d. 1416, June 1. After attending the university of his native town, he continued his studies at Paris, Cologne, Oxford, and Heidelberg, and 1399 took his degree master of arts and bachelor of theology. His reputation for learning was so great, that his advice was taken by Ladislas II., King of Poland, with respect to the founding of the Univ. of Cracow 1410; and Sigismund, King of Hungary, invited him to preach before him at Buda. He entered with his whole soul into the contest of his friend Huss against the abuses of the hierarchy and the profligacy of the clergy. His zeal, however, carried him too far; he publicly trampled the relics under his feet, committed to prison the monks who did not share his opinions, and even ordered one of them to be thrown into the Moldau. When Huss was arrested at Constance, Jerome hastened to defend him; but receiving no satisfactory answer to a letter in which he had demanded a safe-conduct from the council, he set out on his return to Prague, when he was arrested at Hirschau, 1415, Apr., by orders of the Duke of Sulzbach, and conveyed in chains to Constance. Here he was cast into a dungeon, and placed on trial. After months of rigorous imprisonment, he was brought before a council and recanted his opinions, especially his agreement with the views of Wycliffe and Huss; but at a subsequent examination, 1416, May 26, publicly objured his recantation with horror and in the deepest penitence. Four days later he was condemned as a relapsed heretic; and with great firmness and cheerfulness went to the stake. He was burned alive, appealing his cause to the Supreme Judge. Jerome's life has been written by Heller (Tübingen 1835) and by Becker (Nördlingen 1858).

JEROME, *jē-rōm'* or *jĕr'om*, SAINT (EUSEBIUS SOPHRONIUS HIERONYMUS): b. at Stridon, a town whose site is now unknown, on the confines of Dalmatia and Panno-

nia, between 330 and 342—probably nearer the latter; d. 420, Sep. 30. His parents were Christians. His early education was superintended by his father, after which he studied Greek and Latin rhetoric and philosophy under Ælius Donatus at Rome, where he was also baptized. After a residence in Gaul, he seems to have revisited Rome; but in 370 he had settled in Aquileia with his friend Rufinus. For some unknown reason, he suddenly went hence to the East; and after a dangerous illness at Antioch, which appears to have added to his natural religious fervor, he retired, 374, to the desert of Chalcis, where he spent four years in penitential exercises and in study, especially of Hebrew. In 379 he was ordained priest at Antioch, after which he spent three years in Constantinople in close intimacy with Gregory of Nazianzus; and 382 he went on a mission connected with the Meletian schism at Antioch (see MELETIUS) to Rome, where he resided till 385, as sec. of the pope Damasus, and where, though already engaged in his great work of the revision of the Latin version of the Bible, he attained great popularity and influence by his eloquence, sanctity, and learning. Many pious persons placed themselves under his spiritual direction, the most remarkable of whom were the Lady Paula, and her daughter Eustochium. These ladies followed him to the Holy Land, whither he returned 384. He permanently fixed his residence at Bethlehem 386, the Lady Paula having founded four convents, three for nuns, and one for monks, the latter of which was governed by Jerome himself. In this retreat Jerome pursued or completed the great literary labors of his life; and from these solitudes, all peaceful as they might seem, he sent forth the fiery and vehement invectives which marked not only his controversy with the heretics Jovinian, Vigilantus, and the Pelagians (q.v.), but even with his ancient ally, Rufinus (q.v.), and, though in a minor degree, with St. Augustine. His conflict with the Pelagians rendering even his life insecure at Bethlehem, he was compelled to go into concealment for more than two years; and soon after his return to Bethlehem 418, he was seized with a lingering illness, which terminated in his death. His original works, consisting of letters, treatises, polemical and ascetical, commentaries on Holy Scripture, and his version and revision of former versions of the Bible, were published first by Erasmus, 9 vols. folio (Basel 1516), and have been several times reprinted. The best editions are that of the Benedictines, 5 vols. folio (Paris 1693–1706), and, still more, that of Vallarsi, 11 vols. (Verona 1734–42). St. Jerome is universally regarded as the most learned and eloquent of the Latin Fathers. His commentaries on the Bible are especially valuable for their learning; but his opinions are often exaggerated and fanciful, and through his controversial writings there runs a strain of violent invective, which

contrasts unfavorably with the tone of his contemporary St. Augustine. Jerome was a bitter disputant, quarreling even with his friends when they refused to follow him in his own changes of opinions. See VULGATE.

JEROME, JEROME KLAPKA, English humorist: b. Walsall 1861, May 2. He was at first a clerk in a railway office, afterward actor, school-master, and journalist by turns. After many discouragements he succeeded in making a popular hit with his book, *On the Stage—and Off* (1885), largely autobiographical; and his *Idle Thoughts of an Idle Fellow* (1889) and *Three Men in a Boat* (1889) made him famous in America as well as at home. He edited the *Idler* with Robert Barr (q.v.) (1892–7); *To-Day* (1892–7); and has published several successful comedies: *Sunset* (1888); *New Lamps for Old* (1890); *Miss Hobbs* (1900); etc.; and also *John Ingerfield and Other Stories* (1894); *Sketches in Lavender* (1897); *Observations of Henry* (1901); *Paul Kelver* (1902); *Diary of a Pilgrimage* (1891); *Novel Notes* (1893); *Barbara* (1886); *Fennel* (1888); *Ruth* (1890); *Wood Barrow Farm* (1891); *Prude's Progress* (1895); *Rise of Diek Halward* (1896); *Letters to Clorinda* (1898); *Seeond Thoughts of an Idle Fellow* (1898); *Three Men on the Bummel* (1900); *Tea Table Talk* (1903); *Tommy and Co* (1904); *Idle Ideas in* 1905; etc.

JEROME, WILLIAM TRAVERS: American lawyer and politician: b. New York city, 1859, April 18. He entered Amherst College but failing health due to over-study compelled him to leave before his course there was completed. He then entered the Columbia Law School and graduated from there in 1884. In 1888 he was appointed assistant district attorney and had many opportunities to learn the methods and practices by which official corruption was being carried on. In 1890 he became active in the Municipal League, which opposed Tammany. Later, in 1893, he was appointed assistant counsel of the Lexow Investigating Committee; in 1894 became a member of the committee of 70 and managed the campaign which resulted in the election of Mayor Strong. Mayor Strong then appointed him a judge of the court of special sessions and he later became famous for his raids on gambling houses. In 1901 he actively opposed Tammany in the Fusion campaign, and in 1902 was elected district attorney of New York county. In order that he might be within easy reach of those whom he thought most needed his assistance, he immediately opened his headquarters in Rutgers street on the East side. As district attorney did very effective work in breaking down the system of protection of vice and maladministration of office. In 1903 he again took an active part in the Fusion campaign and on Nov. 7, 1905, was re-elected. He wrote *Liquor Tax Law in New York* (1905).

JERROLD, *jĕr'old*, Douglas: dramatist, journalist, and miscellaneous writer: 1803, Jan. 3—1857, June 8; b. London. His early efforts in literature were directed to the theatre, and some of his pieces—*Black-eyed Susan* (1829), for instance—still hold the stage. At a later period he produced several five-act comedies, the best known of which are *Time Works Wonders*, and *The Bubbles of a Day*. Jerrold's reputation stands more securely on his novels, sketches, and essays than on his dramatic works. His *Men of Character* was originally published in *Blackwood*. He joined the staff of *Punch* (1841), and contributed to that periodical from its second number till within a few days of his death: among his numberless articles were *A Story of a Feather*, *Punch's Letters to his Son*, and the world-famous *Caudle Lectures*. Later appeared *The Chronicles of Clovernook*, the kindliest and most delightful of all his books, and *St. Giles and St. James*, his most elaborate novel. For several years before his death, he edited *Lloyd's Weekly* Newspaper, whose circulation rose under his editorship from almost nothing to 182,000. He died from disease of the heart at his house in Kilburn Priory, London.

JERROLD, Walter Copeland, English author and journalist: 1865, May 3; b. Liverpool. From 1890–1905 he was connected with the editorial staff of the London *Observer*, and beside editing several reprints from the works of his grandfather, Douglas Jerrold (q.v.); Thackery's prose works, etc., has published: *Michael Faraday: Man of Science* (1891); *Gladstone: England's Great Commoner* (1893); *Oliver Wendell Holmes* (1893); *The Triumphs of the Printing Press* (1896); *Nonsense, Nonsense!* (1901); *George Meredith* (1902); *The Autolycus of the Bookstalls* (1902); *Charles Lamb* (1905); etc.

JERROLD, William Blanchard, English journalist and miscellaneous writer, son of Douglas Jerrold (q.v.): 1826, Dec 23—1884, Mar. 10; b. London; d. there. He edited Lloyd's newspaper for a long period and published: *Cool as a Cucumber*, a novel (1851); *Swedish Sketches* (1852); *Life of Douglas Jerrold* (1858); *At Home in Paris* (1866); *Up and Down in the World* (1866); *Paris for the English* (3d ed. 1868); *The Cockaynes in Paris* (1871); *The Best of all Good Company* (1871); *Life of Napoleon III.* (1874–84).

JERSEY, n. *jĕr'zĭ*, Jerseys, n. plu. *-zĭz:* fine woolen yarn as spun in *Jersey;* combed wool; the close fitting woolen under-shirt worn by athletes; a woolen jacket.

JERSEY CATTLE: a distinctive breed of the famous dairy cattle of the Channel Islands; raised in the largest island of the Archipelago. The purity of the breed, like those of the sister islands Guernsey and Alderney, is strictly guarded by stringent local laws. The Jerseys,

on their native heaths, are smaller than any other breed of dairy cattle; when transported for stock purposes, their descendants, as may be seen on farms in New Jersey, Pennsylvania, and other states, attain a much larger size. There is an unmistakable, though indefinable air of breeding about the graceful native Jerseys that invariably shows. They vary in color, through shades of yellow, tan, or cream to brown and sometimes black. The eyes are soft and gentle; the horns small and crumpled. They are light, quick, and rather graceful in motion; and are second only to Guernseys in the richness and color of their milk; from 16 to 17 pounds of butter are sometimes obtained weekly from the milk of one cow. Jerseys are much less fleshy than most other breeds, and are sharper in outline.

JERSEY CITY, *jer'zĭ*, N. J.: since the annexation of Brooklyn the most important suburb of New York City, and the second largest city in the state of New Jersey; cap. of Hudson co. It extends along the Hudson river opposite lower New York for a distance of about five miles, and Paulus Hook, its starting point, is exactly opposite the Battery. Several ferry lines connect it with New York and Brooklyn, most of them operated by the great railroads which have their terminals there, and all of the trunk lines leading to the w., n., and s., are represented. It is also the terminal of many of the great steamship lines between New York and Europe.

In spite of its favorable position, the site of the city was used almost entirely as farming land until well along in the 19th century; but eventually the establishment of factories and the approach of the great railway systems had a stimulating effect, and once under way the city grew with surprising rapidity. In 1802 the entire population consisted of 13 persons, who lived in a single house with its outbuildings; this was on Paulus Hook, the point opposite the Battery, named after Michael Pauw, one of the early Dutch settlers, who formerly owned it. During the Revolution the Americans established fortifications there, which were captured by the British, but they were subsequently retaken and destroyed in a most brilliant action by 'Light Horse Harry' Lee, father of General Robert E. Lee. In 1804 the 'associates of the Jersey Company' bought the land and laid it out in streets, incorporating it as a village with a board of selectmen. In 1820 it was incorporated as the 'City of Jersey,' still with a board of selectmen; in 1838 it was reincorporated as Jersey City, with a mayor and aldermen. Repeated annexations have brought it to its present dimensions: Van Vorst in 1851; Hudson City and Bergen, 1869, and Greenville, 1873. In 1889 the city obtained a new charter.

The city lies on a flat meadow about a mile wide from the river back to a sharp bluff; the business section occupies the former, the residence district the latter,

with some very handsome streets of costly dwellings—though Grand street in the business section is a notably beautiful residence street. The municipal improvements are of a high and thorough grade: paving (nearly all the streets are paved, largely with granite and asphalt), sewerage, water supply, etc. The trolley service extends to all the neighboring section of New Jersey. The parks are few and very small, less than in almost any other large American city; but along the ridge in the western part extends the magnificent Hudson County Boulevard, 19 miles long (the entire length of that county from Bayonne up, and five miles of Bergen County), 100 feet wide, and with a noble view of the river and upper New York, as well as the country west. The city hall with the soldiers' monument, the public library, and the Fourth Regiment armory, are among the conspicuous buildings. The intellectual facilities of the city are good, aside from its proximity to New York. It has 27 public schools, besides 10 Roman Catholic parochial schools, and for higher education a public high school, Hasbrouck Institute (1856), St. Peter's (Roman Catholic) College (1878), St. Aloysius Academy, and the German-American School. There is a public library with over 100,000 volumes; and a historical museum rich in colonial documents. The hospitals are the City, St. Francis, and Christ; there are several homes and asylums, and some convents.

The immense commercial and shipping interests of the city, though second only to those of New York, have no separate statistics, the customs report being included in that of the latter city. Its position on the great river, with Newark Bay in the rear and the entrance of Kill von Kull on the south, give it a most favorable commercial position, which has been improved by properly equipped wharves. The Pennsylvania and Erie roads have large grain elevators here. Among the leading industries are those of slaughtering and meat-packing: Jersey City is the meat depot of New York, and has two huge abattoirs, one on the river front and the other on the Hackensack meadows in the northwest. Its slaughter-house products in a single year amounted to $5,708,763. Its other manufactures are enormous, the total amounting to fully $80,000,000 annually. They are exceedingly varied, no one having a great predominance except the tobacco manufacture, over $6,000,000 a year; other important branches are iron and steel goods, locomotives, boilers, and heating apparatus; bridges, ships, and windmills; planing-mill products, cars, carriages, boxes, and cooperage; brass, copper, and zinc goods, electrical and scientific apparatus; pottery and glass; lead pencils, and famous crucibles used in all chemical laboratories and smelting works; watches, jewelry, and musical instruments; sugar and confectionery; mineral waters and patent medicines;

soap and candles; perfumeries; compressed gas; chemicals, paints and roofing materials; paper, window-shades, rubber goods, silk threads and goods, oakum, fireworks, printing and writing inks, varnish, and many others too numerous to mention separately. The city has a two-year mayor and a council with only one chamber, called the board of aldermen; most of the other officials are appointed by the mayor, only the city clerk being appointed by the aldermen, and the street and water board elected. There are four national and several state and private banks, besides loan and trust companies. In 1907 the assessed valuation was $168,685,133; public debt, excluding the water debt, $16,070,911; the sinking fund is above $3,000,000. The expenditures are about $8,000,000 annually, the largest item, $460,000, being for schools. Pop. (1850) 6,856; (1860) 29,229; (1870) 82.546; (1880) 120,722; (1890) 163,003; (1900) 206,433; (1910) 267,779.

JERSEY, *jĕr'zĭ*—THE CHANNEL ISLANDS: chief island of a group—also the group of islands—in the English Channel, near the coast of Normandy (see CHANNEL ISLANDS); geographically pertaining to France, but politically attached to Great Britain; though the numerous islets of the Minquiers and the Chausseys are under French jurisdiction. The other inhabited islands of this group are Guernsey, Alderney, Sark, Herm, and Jethou. The coast is very dangerous, but lighthouses are placed on most of the island headlands, and on the dangerous rocks called the Casquets, w. of Alderney. The following table shows the area and population of the principal islands in 1901 was as follows: Jersey area 29,000 acres, pop. 52,796; Guernsey, Herm and Jethou area 14,000 acres, pop. 40,777; Alderney area 2,000 acres, pop. 2.062; Sark and Brechon area 1209 acres pop. 506; total area 42,600 acres, pop. 96,141.

*Physical Geography —Description.*—Jersey, 125 m. s. w. of Northampton, 17 m. s. w. of Guernsey, and 16 m. from the coast of France, is oblong, about 10 m. in length and 6 in width. The land is high on the n. coast and slopes to the s. and e. It is intersected by several small streams. The coast is indented by open bays on the w., s., and e.; but on the n., by small rocky inlets. The interior is mostly tableland, well wooded especially in the valleys along the winding streams. The principal town is St. Helier (q.v.). The small neat town of St. Aubin lies at the w. extremity of the bay of that name.

For ALDERNEY and GUERNSEY, see those titles.

SARK (*Sereq. Gers*). Great and Little Sark are one island, connected by a natural causeway, called the *Coupée*. They are lofty table-lands, with precipitous sides. The total length of the islands and rocks is about five m. the greatest width, including Brechou and the Burons, about three miles. Sark is eight m.

from Guernsey. The principal objects of interest are the pierced rocks, caverns, and fissures. The caves are very rich in zoophytes. The inhabitants are engaged chiefly in fishing and lead-mining. The coast is very difficult of access, the only entrance to the interior being through a *creux* or tunnel cut in the rock.

*Geology.*—Most of the islands are of primary or granite rocks. Alderney is a mass of syenite, with hornblende, porphyry, and occasional sandstone. The structure of Guernsey is hard syenite in the north and gneiss in the south. The geology of Jersey is more varied, presenting a mixture of metamorphic rocks, conglomerates, and sandstones with syenites and quartzites. Shale and blown sand also are prevalent. Sark is of very hard syenite, with veins of greenstone and felspar. Granite is quarried from all the islands, especially from Guernsey, Herm, and Mount Mado in Jersey, both for home use and for exportation.

*The climate* of the Channel Islands is agreeable and suitable to invalids. The prevailing winds are from n. and n. west. The mean annual rainfall is 35 inches in Guernsey: but the climate is not overmoist, the soil being porous and evaporation rapid. The mean annual temperature of Jersey is 50°·8; of Guernsey, 51°·5, or 2°·5 warmer than Greenwich. The range of temperature is very moderate; but the climate of Guernsey is rather more equable than that of Jersey. Aug. is the hottest mouth; Feb. the coldest. Frost and snow are rare. The autumns are beautiful; and a second summer called the *Petit Etè de Saint Martin*, generally sets in about Oct. 10, and lasts till the middle of December.

*The produce* of the islands is principally agricultural; but horticulture and floriculture are successfully followed—the latter especially in Guernsey. The principal crops are hay, wheat, turnips, potatoes, mangel-wurzel, parsnips, and carrots. The yield of wheat is more than 30 bushels to the acre—the average of England being 24. The Channel Islands possess an excellent breed of horned cattle, usually known as Alderneys, remarkable for small size and symetry, and for quantity and quality of milk. Fruit is much cultivated in Jersey, especially the vine, and the peach, apricot, plum, apple; and the pear, particularly the Chaumontel, attains extraordinary size and flavor in Guernsey. Vegetables are plentiful; and the cow-cabbage grows to the height of 10 or 12 ft. The other products of the islands are principally fish, viz.: turbot, red mullet, John Dory, conger, *lauçons* or sand-eels, also lobsters and oysters, large quantities of which are exported. A considerable traffic is carried on in granite from all the islands; the blue granite from Guernsey for macadamizing, and the pink syenite from Mount Mado, in Jersey, for paving purposes, are highly esteemed.

## JERUSALEM.

*History*—The early history of the Channel Islands is mythical and legendary; but it is probable that the earliest inhabitants were Britons. The islands were under Roman occupation during the 3d and 4th c., the name of Cæsarea or Jersey (Cæsar's Isle) occurring in the Itinerary of the Antonines. Christianity was introduced probably by missionaries from Ireland about 460—St. Helerius being the traditional apostle of Jersey, and St. Sampson of Guernsey. Probably a mixed population of Saxons, Danes, Goths, and Gauls betook themselves to these islands during succeeding centuries, as the Franks possessed the continent. The islands were taken possession of by Rolf or Rollo previous to his invasion of Normandy. After the Norman conquest, the islands were alternately English, under William the Conqueror; Norman, under Rufus; English, under Henry I.; and Norman again, under Stephen. With Henry II., the allegiance of the islands reverted to the king, as sovereign of Normandy as well as England; and after the loss of Normandy, the islands remained faithful to England.

The tradition that King John gave a constitution to Guernsey, has not been authenticated. The islands still belonged ecclesiastically to Normandy, the Bp. of Coutances being their diocesan. Edward III. and Henry V. materially weakened the papal bond, but it was not wholly severed till the Reformation, after which (1658) they were attached to the see of Winchester. In Henry VI.'s time the French held Jersey for six years. During the civil war, Jersey was loyal and Episcopal; Guernsey, republican and non-prelatical; and traces of this divergence are still found. In 1781, during the first American war a French expedition under Baron de Rullecourt, landed in Grouville Bay, and marched into the market-place of St. Helier, but was repulsed with loss by the garrison and militia. During the French and American wars the islanders fitted out many privateers, and obtained rich prizes. Smuggling was finally suppressed 1800. Since the peace, the Channel Islands have thriven and prospered by commerce and agriculture, and especially by becoming the resort of numerous families from England attracted by the beauty of the scenery or the salubrity of the climate.

JERUSALEM, *jė-rô'sa-lĕm* [Heb. *Yerushalem*, Gr. *Hierousalem*, Lat. *Hierosolyma;* called also in Arabic *El-Khuds* or *El-Kods*, 'the Holy']: Jewish capital of Palestine. Its original and early history are very obscure, Josephus (*Antiq.* i.x.2) indentifies it with the 'Salem' of which Melchizedek (Gen. xiv. 18) is called King; but St. Jerome doubts this. Critics are better agreed as to the identity of Jerusalem with Jebusi, the city of the Jebusites (Josh. xviii. 28), and we know that the Jebusites retained possession of the strong positions of the hill of Zion for a considerable time after the conquest

of Canaan, and even after the storming of Jerusalem (Judg. i. 8), while the tribes of Judah and Benjamin occupied the lower city. They were finally dispossessed by David (II K. v. 7). The name Jerusalem is first mentioned Josh. x. 1. The city is on the original border of Judah and Benjamin, the line of which runs through the valley of Hinnon; so that Zion and the northern city lay within the territory of Benjamin. Its historical importance dates from the time of David, who there fixed his residence, calling it by the name of the 'City of David,' transporting to it the ark of the covenant, and building in it an altar to the Lord, on the place of the apparition of the angel by which the plague was stayed (II K. xxiv. 25). The building of the temple under Solomon was the consummation of the dignity and holiness of Jerusalem; and the city was further enlarged, strengthened, and beautified by this king and by his successors. It suffered a diminution of political importance through the revolt and succession of the Ten Tribes, from which date its history is identified with that of the kingdom of Judah. It was pillaged (B.C. 973) by Sesac (Shishak), King of Egypt (II Chron. xii. 9), by Jehoash, King of Israel (II K. xiv. 13, 14); and finally (B.C. 588), it was taken, after a siege of three years, by Nebuchadnezzar, who razed its walls, and destroyed the temple and palaces by fire (II Kings xxv.). Having been rebuilt after the Captivity (B.C. 536), it was again taken and pillaged under Ptolemy Lagos (B.C. 320), and under Antiochus Epiphanes (B.C. 161), after the well-known and mysterious repulse of Heliodorus (B.C. 176); and Pompey (B.C. 63) took the city on the anniversary of its capture by Nebuchadnezzar, put 12,000 of the inhabitants to the sword, and razed the walls to the ground, sparing at the same time the treasures of the sanctuary. However, a few years later, they were pillaged (B.C. 51) by Crassus; and from these beginnings dates the continued series of Roman aggressions, which terminated in the complete destruction of the city and dispersion of the Jewish race, under Vespasian and Titus (A.D. 70). From the description of the contemporary historian Josephus, we learn that at this period, Jerusalem, which occupied the four hills Zion, Acra, Moriah, and Bezetha, (separated from each other by deep valleys or gorges), consisted of three distinct regions—the Upper City, with the citadel of Zion: the Lower City, to the n., on the hills of Acra and Moriah; and the New City still further northward. The temple stood on the hill of Moriah, and John Hyrcanus built, on the n.w. angle of this hill, a fortress called Baris, which was strengthened and beautified by Herod, and called 'Antonia,' in honor of Mark Antony. Herod's own palace stood at the n. extremity of the Upper City, and on the e. angle was an open place called Xystus, surrounded by galleries, and communicating by a bridge with the temple. The

environs of the city were adorned with gardens, parks, ponds, and tombs. In the progress of ages, ancient Jerusalem was surrounded by three walls, the direction of which, in some portions of their course, is difficult to be determined, though it is on this that the controversy as to the authentic site of the Holy Sepulchre (see HOLY PLACES—HOLY SEPULCHRE) mainly turns. The first and most ancient wall surrounded the Upper City on the hill of Zion, and joined on its n. side the prodromum of the temple. The second wall, or the wall of Ezechias, inclosed the hill Acra, around which stood the Lower City. It was connected at the s.w. angle with the first wall, from which it ran in a semi-circle to the n. and n.e., surrounding the Upper City till it joined the fortress Antonia, described above. The third wall, built by Herod Agrippa, which inclosed the hill Bezetha and the so-called New City, appears to have started from the n.w. angle of the first wall, probably at the tower called 'Hippicus,' and to have taken a n. and n.e. direction around the New City till it met the n.e. angle of the temple wall. It thus, for a part of its course, was external to the second wall. The site of the Church of the Holy Sepulchre and the Hill of Cavalry are thus supposed, by the defenders of their authenticity, to have been without the wall of Jerusalem as it stood in the days of our Lord—that is, the second wall, though they were taken in by the extension of the city a short time afterward, when the third wall was built at some distance to the w. of the second, by Herod Agrippa. The investigation of the exact direction of the second wall has long been an object of desire with biblical antiquaries, and it is probable that the excavations now projected or in progress will remove much uncertainty.

The city destroyed by Titus was rebuilt by Hadrian; but only as a heathen and Roman city, under the name Ælia Capitolina, with a temple of Jupiter; not as the capital of the Jewish race, who were forbidden, under pain of death, to visit it. Constantine, under the inspiration of his mother Helena, took measures to consecrate and perpetuate its Christian memories by ascertaining the sites of the various events in the Passion of our Lord, and erecting on them churches and other suitable memorials of those scenes of the redemption of the world, which thenceforward became an object of pious veneration to pilgrims from every part of the church. On the contrary, Julian the Apostate, with the design, according to the contemporary Christian account, of falsifying the prediction of our Lord, that 'not one stone should be left upon another,' encouraged and assisted the Jews to return and rebuild their ancient capital; an enterprise which, as the same writers—supported, in most respects, by the pagan historian Ammianus Mercellinus (xxiii. 1)—affirm, was frustrated by an earthquake or

TURKEY IN ASIA, PERSIA AND AFGHANISTAN.
SCALE OF STATUTE MILES.
0 50 100 200 300 400 500
Copyright, 1899, by Rand, McNally & Co.
R., MC N. & CO. ENGR'S CHI.
Longitude East 50 from Greenwich.
BLACK SEA
MEDITERRANEAN SEA
PERSIAN GULF
GULF OF OMAN
ARABIAN SEA
GULF OF ADEN
TROPIC OF CANCER
EGYPT
AFRICA
ARABIA
PERSIA
AFGHANISTAN
BALUCHISTAN
SYRIAN DESERT
CONSTANTINOPLE
TEHERAN
CABOOL
CAIRO

eruption, which the Christians ascribed to divine interposition.

Jerusalem again fell under foreign domination 614, when it was stormed by the Persian king, Chosroes II. It was restored to Emperor Heraclius 628; but 637 it fell into the hands of the Caliph Omar, and in 1077 passed under the Turkman domination. During this long period, the practice of pilgrimages to Jerusalem was never entirely interrupted. In consideration of a tribute paid by each Christian visitor, a contemptuous permission was accorded for the purpose; but the cruelties practiced on the pilgrims by the Turks being reported in the West, and especially by the fiery enthusiast Peter the Hermit, aroused the piety and chivalry of Europe, and led to that extraordinary succession of 'holy wars' which for a time restored the tomb of the Lord Jesus and the holy city to Christian hands. 1099, July 15, Jerusalem was taken by assault, and was declared the capital of a Christian kingdom. Through a rapid succession of undistinguished names, with the exception of the first, the celebrated Godfrey of Bouillon, the new sovereignty was precariously maintained until 1187, when it fell once more before the arms of the great Saladin, since which time—if we except the brief and empty pageant in which Frederick II., Emperor of Germany, having assumed the title by a collusive treaty with the sultan, entered into Jerusalem 1229 March—the city can hardly be said to have known other than Moslem rulers. It was retaken by the Sultan of Damascus 1239; and though it was taken up 1241 to the Knights Hospitallers, they were driven out 1244 by the Chorasmian Turks, by whom the ascendency of the Crescent was finally established. It was captured from the Saracens by the Mamelukes 1382, but recovered in 1517 by Sultan Selim, whose son, the celebrated Soliman, built the wall which at present incloses the city. Jerusalem is now the seat of a pasha, with the ordinary powers of a Turkish viceroy.

It remains to describe the present condition of the city. It is in 31° 46′ 45″ n. lat., 35° 13′ 25″ e. long., on an elevation 2,000 ft. above the Mediterranean, from the nearest point of which it is distant 29 m. east. In its present shape, it is an irregular square, and is still surrounded by the embattled wall, about 2½ m. in circumference, erected by Sultan Soliman. The modern inclosure, however, is far from coinciding with that of the Jewish period. In addition to the changes produced by the rebuilding of the city under Hadrian, by which the greater part of the region anciently called the New City was excluded, the stream of population in the Christian period having flowed toward the Holy Places, the modern city has extended considerably toward the west. The four hills on which the ancient city stood are inclosed within the modern precincts; but the portion of the old city which lay n. of Bezetha is now excluded, and the valleys

between the hills having been filled up by accumulation of ruins ever since the time of Nehemiah (Neh. iv. 10), little inequality of surface is now observable. The depth of the debris averages 30 to 40 ft. in all the town; in the valleys it is 70 ft. in depth, and in one place the rock has been reached only by a shaft 120 ft. deep. The streets are narrow, unpaved, and irregular, and the houses gloomy and unsymmetrical; though owing to its striking position, especially when viewed from the e., and to the number of minarets and domes which rise above the level of the flat-roofed houses, the general appearance of the city, seen from without, is picturesque and pleasing. There are seven gates, of which the principal are the Jaffa Gate, the Damascus Gate, the Stephen's Gate, and the Zion Gate. If lines be drawn between these four gates, the city will be divided into four parts, which almost coincide with the four quarters into which the population—Christian, Armenian, Jewish, and Moslem—is divided; the Christians occupying the n.w., the Armenians the s.w., the Jewish the s.e., and the Mohammedans the n.e. quarters within the wall. To all alike, the city is the seat of many sacred associations. The Jews have about 250 places of prayer, of which 70 are in independent buildings. The Mohammedans, since the days of the first occupation, have held possession of the site of the temple of Solomon, on which the so-called Mosque of Omar now stands; and the pasha's Seraiyah, or official residence, occupies the site of the Tower Antonia. The Church of the Holy Sepulchre (see HOLY PLACES), with its inclosure, is occupied by all the Christian communities in common. The Latins possess, for their own worship, the Church of St. Saviour; it is attached to the Franciscan convent, in which Europeans of all denominations receive ready hospitality. In like manner, the Greeks, Armenians, Syrians, Copts, and Abyssinians have convents or hospitals appropriated to their several communions. That of the Armenians on Mount Zion is said to be one of the richest in the east; and the same communion possesses another convent on the reputed site of the house of Caiaphas. The street leading from the Eastern or Stephen's Gate to the Holy Sepulchre is called the *Via Dolorosa*, and is believed to follow the route of our Lord's sorrowful procession from the Hall of Judgment to Mount Calvary. In other parts of the city or its immediate environs, are shown the reputed sites of the Mount of Olives, the Tomb of the Virgin, the Pool of Bethesda, the Potter's Field, and the sites of almost all the events of the Passion of our Lord or of scenes connected therewith. The authenticity of these sites has been the subject of considerable controversy in later times: see HOLY PLACES. Beyond its religious associations, the modern city has few advantages. It is without industry except the manufacture of soap and of *Jerusalem ware*, viz., chaplets, crucifixes, beads,

crosses, etc., made of mother-of-pearl or wood, and sold to the pilgrims, who number 6,000 to 8,000 annually. For the use of the Mohammedan pilgrims—for whom the Mosque of Omar is inferior in sacredness to only Mecca and Medina—amulets of black stone are made. Captain Wilson of the Ordnance Survey 1866 executed trustworthy plans of Jerusalem and environs; Colonel Warren made extensive excavations 1867–70; further explorations were made by Lieut. Conder, 1872–75.

In ecclesiastical history, Jerusalem has not filled the space which might have been expected. When the city was rebuilt after its destruction under Titus, the new city Ælia was so inconsiderable as a Christian community, that it became a suffragan see of the metropolitan of Cæsarea. The council of Nice recognized a precedency of honor; but it was not till the Council of Chalcedon that the church of Jerusalem was raised to the rank of a patriarchate, with jurisdiction over all the bishops of Palestine. Jerusalem, however, ranked last among the eastern patriarchates. In common with the other eastern churches, Jerusalem followed Constantinople in its secession from the West. The patriarch of Jerusalem was a party to the decree of union in the Council of Florence; but his flock soon fell back into schism; and though the titular rank of patriarch of Jerusalem has been maintained in Rome, the church remained under the care of the Franciscan community, and the Latin patriarch had never resided in Jerusalem until the accession of Pope Pius IX., by whom the duty of residence was re-established. In 1841, the governments of England and Prussia united for the establishment of a Prot. bishopric in Jerusalem, the appointment to which rests alternately with England and with Prussia.

The population is increasing, mostly by Jewish accessions. The city, now reached by rail from Joppa, contained (1906) nearly 50,000 inhabitants, of whom more than half were Jews, nearly one-quarter Moslems, and the rest Christians of various sects. There has been much improvement in the Jewish quarters, with four hospitals, a large free library, schools for boys and girls, and technical shops.—See Robinson's *Biblical Researches,* Stanley's *Sinai and Palestine,* Williams's *Holy City,* Richardson's *Travels along the Mediterranean,* Ritter's *Erdkunde,* Sepp's *Forschungen eines Teutschen Reisenden;* on the Patriarchate, Le Quien's *Oriens Christianus,* Mosheim's *Church History;* and in regard to recent exploration, Captain Warren's *Underground Jerusalem.*

JERUSALEM ARTICHOKE, *jė-rô′să-lĕm âr′tĭ-ehōk* [a corruption of It. *girasōlĕ,* sun-flower or turnsole—from It. *irare,* to turn, L. *gyrārĕ,* to turn round; It. *sole,* L. *sol,* the sun: Eng. *artiehoke*]: called also *Topinamburi* (*Helianthus tuberosus*): plant of nat. ord. *Compositæ,* and of the same genus with the common Sunflower

(q.v.); native of Brazil. The name artichoke is merely from a supposed similarity of flavor in the eatable part —the tuber—to the artichoke. The Jerusalem artichoke has straight simple stems 8 to 12 ft. high, and many rough ovate, acute, stalked leaves; and in the end of autumn, produces yellow flowers resembling those of the common sunflower, but smaller. The thick, fleshy, and knotted perennial root produces, closely around it, oval or roundish tubers, sometimes 30 or 50, which are reddish on the outside, and whitish within, in appearance very similar to potatoes. They have a sweetish, mucilaginous taste when boiled, and are much more watery and less nourishing than potatoes. They are, however, very palatable, when properly prepared with sauce, and make good soup. The plant is useful also for fodder for cattle which is yielded by its leaves and the more tender parts of the stems. The fibre of the stems may probably be found valuable for paper-making. The stems and leaves contain much nitre, and have been used for making potash. The Jerusalem artichoke is to a small extent an agricultural crop in parts of Europe. It is generally propagated by small tubers, or cuttings of tubers, like the potato; and its cultivation is in most respects similar, though the aspect of the plant is very different.

JERU'SALEM CHER'RY: name of two species of Solanum, *pseudo-capsicum* and *capsicastrum*, largely cultivated as house-plants for their ornamental character. The first is the oldest form, having been introduced into England from Madeira about 1596, and has stalks 1 to 2 ft. high; the second is a dwarf about half the height of the first. Both are propagated from seeds or cuttings, and bear orange-colored berries about the size of common cherries. A highly cultivated third form, *hybridum-compactum*, is much used in England as a table decoration. The origin of the name is unknown.

JERVIS, *jĕr'vĭs*, John, Earl of St. Vincent: British admiral: 1734, Jan. 9—1823, Mar. 13. He obtained a commission in the navy as lieut. 1755, and commanded the *Alarm* frigate in the Mediterranean 1769. He was appointed to the *Foudroyant*, finest two-deck ship in the British navy, and engaging the *Pegase*, 74 guns, off Brest, he took her without the loss of a man. For this exploit, he was made K C B. In 1787, he was made rear-admiral; in 1793, he commanded the naval part of the expedition against the W. India Islands, Sir C. Grey commanding the troops; and so successful was this expedition, that though the French were well prepared, and fought desperately, every island fell in succession into the hands of the British. In 1795, he received command of the Mediterranean fleet. In 1797, Feb. 14, with only 15 sail of the line, he fell in, off Cape St. Vincent, with the Spanish fleet of 27 sail. Without hesitation, Jervis engaged the enemy, and the battle of St. Vincent

was fought. The genius of Nelson, however, contributed greatly to the success of the day. For this victory, the king created Jervis Earl St. Vincent, and parliament settled on him a pension of £3,000 a year. After having, by great firmness, repressed a mutiny off Cadiz, which threatened the loss of the whole fleet, he was compelled by ill health to return home. After having held the appointment of first lord of the admiralty, and for a second time commanded the Channel fleet, he retired into private life. A public monument was erected to his memory in St. Paul's Cathedral.

JERVIS, *jĕr'vĭs*, JOHN BLOOMFIELD, LL.D.; 1795, Dec. 14—1885, Jan. 12; b. Huntington, N. Y.: engineer. He was employed in the construction of the Erie canal, and subsequently superintended the survey and construction of the Delaware and Hudson canal, invented the locomotive truck and was chief engineer of the Albany and Schenectady and Schenectady and Saratoga railroads. In 1833 he became chief engineer of the Chenango canal, 1835 was employed to make estimates and surveys for an enlargement of the Erie canal, 1836 was appointed engineer in charge of the construction of the Croton aqueduct, 1846–8 was consulting engineer of the Boston waterworks, 1851 became engineer of the Chicago and Rock Island railroad, 1854 its president and was afterward connected with the Pittsburg Fort Wayne and Chicago railroad. He published *Description of the Croton Aqueduct* (New York, 1842); *Report on the Hudson River Railroad* (1846); *Railway Property* (1859); *The Construction and Management of Railways* (1861); and *Labor and Capital* (1877); and received the degree LL.D. from Hamilton College 1878.

JESHURUN, *jĕsh'ū-rŭn* (mistakenly *Jesurun*): symbolical name for Israel, in Deut. xxxii. 15; xxxiii. 5, 26; Is. xliv. 2. Some Hebraists give it the signification 'the upright'; others, 'the blessed'—referring to Israel either as worshippers of the true God, or as prospered by Him.

JESS, n. *jĕs*, JESSES, n. plu. *jĕs'ĕs* [OF. *gect*, or *ject*, a jess—from *jecter*, to cast or hurl—from L. *jactārĕ*, to hurl: It. *geto*, a jess (see JET 1)]: in *hawking*, a strap of leather tied about the leg of a hawk, having little rings for the leash, by which it is held on the fist.

JESSAMINE, n. *jĕs'să-mĭn:* the jasmine (q.v.).

JESSANT, *jĕs'ant*, in Heraldry: springing forth, frequently synonymous with *Issuant*, rising, as a demi-lion is often represented doing, from the bottom line of a field, or upper line of an ordinary. Jessant is sometimes used improperly for *naissant*, or rising from the middle of an ordinary. The phrase *jessant-de-lis* is used with respect to a strange heraldic device representing a leopard's head *affronté* with a fleur-de-lis passing through it.

JESSE, n. *jĕs'sĕ:* the large branched candlestick formerly used in churches, so called as resembling the genealogical tree of *Jesse,* the father of David, a picture of which was formerly hung in churches; the same represented in sculpture or stained glass. JESSE-WINDOW, in *arch.,* a window of which the tracery and glazing represent a genealogical tree of Jesse.

JESSE, *jĕs'ĕ,* in the Bible stands at the head of the house of David, who was his son. While Saul was persecuting David he took refuge in the land of the Moabites, where Ruth the Moabitess, his grandmother, had lived. In the genealogy of Jesus Christ as given in the Gospels of SS. Matthew and Luke he is mentioned as one of the ancestors, as Christ in the New Testament is hailed 'Son of David.' This fact has suggested some of the most interesting creations of mediæval art, and what is called a 'Jesse window' is a stained glass church window in which Jesse is depicted as the root of a tree which bears as its fruit David and other heroes and saints of the Old Testament, with the infant Jesus in the arms of his mother on the highest branch.

JESSE, RICHARD HENRY, American college president: b. Epping Forest, Lancaster County, Va., 1853, March 1. He was graduated from the University of Virginia in 1875, was dean of the academic department of the University of Louisiana from 1878 till its union with Tulane University in 1884, in which institution he was professor of Latin till 1891. From January 1891 till December 1907 he was president of the University of Missouri.

JES'SOP, AUGUSTUS, English Anglican clergyman and author: b. 1824, Dec. 20. He was educated at Cambridge and after taking orders in the English church was curate of Papworth St. Agnes, Cambridgeshire, 1848–54; head master of Helston Grammar School, Cornwall, 1855–9; and head master of King Edward VI.'s School, Norwich, 1859–79. He has been rector of Scarning, Norfolk, from 1879, is an honorary canon of Norwich Cathedral and since 1902 has been chaplain-in-ordinary to the king. As a writer he became widely known by his *Aready for Better for Worse* (1881), studies of agricultural life in Norfolk; and among other works of his are: *Studies by a Recluse; Trials of a Country Parson; The Coming of the Friars* (1885); *John Donne; Before the Great Pillage* (1901); etc.

JEST, n. *jĕst* [L. *gestus,* done, as a feat or deed, then applied to the relation or story of it: L. *gesta,* in mid. L. *Gesta Rōmānōrŭm,* a celebrated collection of stories published in the 14th c., then an amusing story, and finally a joke: OF. *geste,* an exploit, a tale: OE. *gestour,* a narrator of stories: Icel. *gis,* jeering, bantering—*lit.,* a deed or act, and then a narrative of such]: something ludicrous, or only intended to excite laughter; joke; fun; the object of jest or laughter; something said in joke or

raillery, not in earnest: V. to divert by words or actions; to utter untruth or exaggeration in play or diversion; in *OE.*, to play a part in a masque. JEST'ING, imp.: ADJ. having the character of a jest or sarcasm: N. talking for diversion or merriment; the making merry by words or actions. JEST'ED, pp. JEST'ER, n. *-ẽr*, one given to merriment and pranks; a buffoon; a merry-andrew. JEST'FUL, a. *-fûl*, full of jokes. JEST'INGLY, ad. *-lĭ*, not in earnest. IN JEST, not in earnest; in mere sport and diversion.—SYN. of 'jest, n.': sport; raillery; burlesque; diversion.

JESUATE, n. *jĕz'ū-āt* [so called from the frequency with which the order pronounced the name of Jesus]: in *chh. hist.*, name ultimately given to a monastic order, which, when first founded, 1368, was called Apostolic Clerks.

JESUIT, n. *jĕz'ū-ĭt* [F. *Jésuite;* Sp. *Jesuita*, a Jesuit —from *Jēsŭs*]: member of the order or society of *Jesus*, founded by Ignatius Loyola 1534; a religious order in the R. Cath. Chh. renowned for the zeal, learning, and address of its members: hence, an intriguer; a crafty person. JES'UIT'IC, a. *-ĭt'ĭk* or JES'UIT'ICAL, a. *-ĭ-kăl*, pertaining to the Jesuits; crafty; deceitful. JES'UITICALLY, ad. *-lĭ*. JES'UITISM, n. *-ĭt-ĭzm*, or JES'UITRY, n. *ĭt-rĭ*, the principles and practices of the Jesuits; cunning; deceit; hypocrisy. JESUIT'S-BARK, Cinchona, which see.

JES'UITS, or SOCIETY OF JESUS: celebrated religious order of the Rom. Cath. Church, which has filled a large space in the ecclesiastical and even in the political history of the world. It was founded 1534, by Ignatius of Loyola (see LOYOLA), in concert with five associates.—Peter Le Fevre, a Savoyard; three Spaniards—James Lainez, Francis Xavier, and Nicholas Bobadilla; and a Portuguese named Rodriguez. The original object of association was limited to a pilgrimage to the Holy Land, and a mission for the conversion of infidels; but as all access to the Holy Land was precluded by the outbreak of a war with the Turk, the associates turned their thoughts to a more comprehensive organization, specially designed to meet those modern requirements which had arisen since the Reformation. With this view, Ignatius of Loyola, with Lainez and Le Fevre, having meanwhile recruited several new associates, repaired to Rome 1539, and submitted to the pope, Paul III., the rule of the proposed order, the great aim of which was expressed in their adopted motto: *Ad majorem Dei Gloriam* (To God's greater glory); and the vow of which, in addition to the threefold obligations common to all Rom. Cath. religious orders, of chastity, poverty, and obedience, comprised a fourth, whereby the members bound themselves unreservedly to go as missionaries to any country which the pope might indicate to them. The new rule was approved by a bull 1540, Sep. 27; and in the following

year, the association was practically inaugurated at Rome, by the election of Ignatius of Loyola as its first general.

The original constitution of the society has undergone so few modifications that it may be described without specifying these changes. Although it is usually represented as abolutely monarchical, yet the authority of the general is in many respects, strictly limited. It is true, that the general—elected by a congregation of professed members selected for the purpose by the whole body of professed members in the various provinces—holds his office for life; and that though aided in his government by a council of five assistants from the five chief provinces, he is not obliged to follow their voice, even when unanimous. But, on the other hand, he is strictly bound by the constitutions of the order; nor, though he may dispense in particular cases, is he competent, of his own authority, to annul or alter any of their constitutions. In like manner though no instance of deposition has ever occurred, he is liable to be deposed by the sentence of a general congregation, in certain contingencies specifically pointed out by the constitutions.

The body over which this general presides consists of four classes: 1. Professed, who, having passed through all preparatory stages, which commonly extend over 10 or 12 years, or even longer, have solemnly taken the vows described above including that of obedience to the pope. It is from this class alone that the general and all the higher officials of the society are chosen. 2. Coadjutators, spiritual and temporal; the spiritual—who have completed their studies, and have (seldom before their 32d year, or even later) been admitted to holy orders—being designed to assist the professed in preaching, teaching, and the direction of souls; the temporal being lay-brothers, to whom the minor and menial offices of the society are assigned. 3. Scholastics, who having passed through the novitiate, are engaged for a long series of years, either in pursuing their own studies, or in teaching in the various schools of the order. 4. Lastly, novices, who, after a short trial as 'postulants' for admission, are engaged for two years exclusively in spiritual exercises, prayer, meditation, ascetic reading, or ascetic practices, and generally in a course of disciplinary training. The administrative and executive government of the society, throughout the various provinces or countries into which it is divided, is intrusted, under the general, to provincials, who are named by the general, and hold office, as do all the other officials, for three years. In each separate province, there are three kinds of communities—professed houses or residences, colleges, and novitiates. Not only the superiors of these houses—who are called by different names—but also all the various office-bearers in each, are appointed by the general, who receives at stated intervals—monthly from provinces,

quarterly from colleges and novitiates—a detailed report of the character, conduct, and position of each member of the society. In all these gradations the subordination is complete, and the obligation of obedience is immediate and unreserved; and one of the most familiar accusations against the society is, that this duty of blind and implicit obedience makes the superior the sole and final arbiter of conscience for all his subjects, the judge of good and evil, of virtue and of vice. Nevertheless, whatever may be said of the practical tendency of this relation, the Jesuits and their apologists plead that, both in the rules of St. Ignatius and in the so-called 'examen' of the candidate, there is contained, in the duty of obedience to a superior, an explicit reservation for the subject, 'unless where the superior should command what is sinful.'

Such is the internal organization of this renowned association. The system of training applied to the formation of its members evinces the most profound knowledge of the human heart, and the most correct appreciation of the religious instincts and impulses of mankind. The long exercises of the novitiate were designed by Ignatius to form the individual character in habits of personal holiness, and practices of personal piety. It was the business of the school and college to form the social character of the future teachers of men, and directors of the destinies of society. To a learning carefully adapted to the actual condition and progress of knowledge, they sought to add manners and habits calculated to inspire confidence, and to disarm prejudice and suspicion. Unlike the older orders, they made no parade of a special calling, whether by a peculiar habit, or by peculiar exterior indications of austerity or asceticism. They enjoyed, indeed, in these respects, some exemptions from the more austere practices of other orders. Their churches were designed but as supplementary to those of the parish clergy (whose ordinary costume they adopted as their own conventional dress), without the canonical services, without much imposing or attractive ceremonial, being appropriated chiefly for religious instruction, and for the duties of the confessional. Their casuistry avoided all harsh and excessive rigor; and it cannot be doubted that some of their writers carried it to the opposite extreme. But above all, they addressed themselves to the great want of their time—education; and through the mastery which they soon obtained in this important field, as well as their eminence in every department of learning, divinity, philosophy, history, scholarship, antiquities and letters, they attained unbounded influence in every sphere of society. It may be added that to their extraordinary success in thus drawing to themselves, for education, the youth of every country into which they were introduced, the historians of the society ascribe much of the opposition which they encoun-

tered from the universities and collegiate bodies whose monopolies they invaded.

The organization of the society is settled, in every important particular, by the original rules and constitutions of St. Ignatius. The opponents of the Jesuits, however allege that, in addition to these public and avowed constitutions, there exists in the society, for guidance of their hidden actions, and for private direction of the thoroughly initiated members, a secret code, entitled *Monita Secreta* (Secret Instructions), which was meant to be reserved solely for the private guidance of the more advanced members, and which was not only not to be communicated to the general body, but was to be boldly repudiated by all, should its existence at any time be suspected or discovered. This singular code, a master-piece of craft, and duplicity, was printed first at Cracow 1612, and has been repeatedly reprinted by the enemies of the Jesuits; but it is indignantly disclaimed by the society. The accounts of the time and circumstances of its discovery are suspicious and contradictory. The book has been repeatedly condemned, both at Rome and by other authorities, as well as by the society, and its apocryphal character is now commonly admitted (see Barbier, *Dictionnaire des Anonymes*).

The history of the society is so varied, in the different countries, that it is necessary to allude to each separately, dividing it into three stages—the rise, the suppression, and the restoration of the order.

In Italy, its early career was brilliant and unclouded. Before the death of the first general, Ignatius, 1556, the Italian Jesuits had swelled to 1,000 in number, and the order was established in 12 provinces. Their first check in Italy occurred in Venice. In the contest of this republic with Paul V. (q.v.) the Jesuits, taking the side of Rome, accepted, 1606, the alternative, proposed by the senate, of leaving the Venetian territory; nor was it till 1656 that they were re-established in Venice, from which time they held undisturbed influence in Italy until the suppression of the order.

The earliest settlements of the Jesuits outside of Italy were in Portugal and Spain. In 1540, Rodriguez—Portuguese nobleman—and Francis Xavier opened colleges in Portugal, at the invitation of the king. Francis Borgia, Duke of Gandia, in Spain, was equally well received in his native country, where the order flourished so rapidly, that, at the time of the suppression, the Spanish Jesuits numbered above 6,000.

In France, though a house for novices was founded in Paris by St. Ignatius 1542, the Univ. of Paris opposed their introduction as unnecessary, and irreconcilable with its privileges. They were distasteful to supporters of the Gallican liberties, and still more to the Huguenots. The jurists, the parliament, and the partisans of absolutism, were alarmed by the free political opinions which

had found expression in some of the Jesuit schools. On the other hand, the democratic party attributed to them a sinister use of their influence with courts. And thus their progress in France was slow, and their position at all times precarious. It was with much difficulty that the parliament of Paris consented to register the royal decree which authorized their establishment. In more than one instance the university protested against their schools as invading its privileges. In the wars of the League, they made new enemies; and at length the assassination of Henry III. by Clement (although no evidence of any connection with the Jesuits appeared in his case), and the circumstance, still more industriously urged against them, that Chatel, who attempted the life of Henry IV., had at one time been a pupil in their schools, led to their expulsion from France 1594. They were reinstated, however, 1603; but on the assassination of Henry IV. by Ravaillac, the outcry against them was renewed. Although it seems quite certain that this clamor was utterly without foundation, yet the opinions held by one of their order, Mariana (q.v.), on the right of revolt, though condemned by the general, gave a color to this and every similar imputation. A less deep but more permanent and formidable movement against them was gradually stirred up at a later period, by a combination of all the causes of unpopularity already described, to which new point was given by the well-known Jansenist controversy, and by the questions as to the imputed laxity of the moral teaching of the Jesuits, and their alleged corrupt and demoralizing casuistry. What the ponderous and indignant prelections of the Sorbonne, and the learned folios of the Dominican and Augustinian schools had failed to accomplish, the wit, and brilliancy of the celebrated *Lettres Provinciales* of Pascal (q.v.) effectually achieved. The laxity of some of the Jesuit casuists was mercilessly exposed by this brilliant adversary, who represented it as the authorized teaching of the order, and the crafty maxims and practices popularly ascribed to the society were placed before the world in a light at once exquisitely amusing and fatal to the reputation of the body. The attempts at rejoinder on the part of the Jesuits served only to fix the ridicule more firmly. Of the thousands who laughed at the happy humor, or sympathized with the vigorous raillery, of Pascal, few, indeed, could plod through the learned but heavy scholasticism of his adversaries. In vain the Jesuits insisted that the obnoxious casuists had been condemned by the society itself; in vain they showed where their opinions differed from those imputed to them. The wit of Pascal remained unanswered; and whatever were the logical merits of the controversy, no doubt could be entertained as to its popular issue. The pungent pleasantries, too, of the *Provincial Letters* were but a foretaste of the acrimony of the later Jansenistical con-

troversies, in which the Jesuits stored up for themselves an accumulation of animosities in the most varied quarters—the divines, the lawyers, the courtiers—which were destined to bear bitter fruit in the later history of the society in France. Nevertheless, after a long conflict, they enjoyed a temporary triumph in the last years of the Regency and the beginning of the reign of Louis XV.

In Germany, the Jesuit institute was received with general and immediate favor. In the Rom. Cath. territories, Austria, Bavaria, and the Rhenish principalities, they not only founded colleges and other establishments of their own, but they were appointed at Ingolstadt and other universities to hold important professorships, and received in many dioceses the charge of the episcopal seminaries then newly established. Before the death of the first general, St. Ignatius, the order could reckon in Germany 26 colleges and 10 professed houses; and Lainez, second general, was able to say that there was scarce a German town of note which had not a Jesuit college. In the mixed states, their career was not so unclouded. Their great learning and ability, and their thorough devotion to the church, made them at once eager and formidable polemics. In Hungary and Transylvania, much bitterness arose out of their introduction; the same may be said of Bohemia and Moravia; and through the whole course of the Thirty Years' War the Jesuits, though in many instances wrongfully, were regarded by the belligerent Protestants as the soul and centre of the Rom. Cath. camp.

In the Netherlands, they encountered some opposition at first; but 1562, Lainez, second general of the order, came to the Low Countries, and a college was opened at Louvain, which eventually became one of the greatest colleges of the order. In the Netherlands, the Jansenistical party was less numerous and less influential than in France, and the conflict with them was less permanently prejudicial to the Jesuits. In the Prot. kingdoms, the Jesuits obtained entrance only as missionaries, and in some, as in England, Scotland, and Ireland, with great difficulty and peril. From England they were excluded by the penal laws under pain of death; nevertheless, with a constancy and devotedness which it is impossible not to admire, they maintained through the worst times an unbroken succession of missionaries in many parts of England. They often resorted to the most singular disguises, and generally bore false names; and several of the old Rom. Cath. mansions still show the 'Priest-hole,' contrived as a retreat for them in sudden emergency. Into Ireland they effected entrance almost at their foundation, and after many vicissitudes, toward the close of the reign of Charles II., they had more than one considerable college for the education of youth.

But a still more fertile field for the enterprise of the order was that of the missions to the heathen, in which

they outstripped all the older orders in the church. In the Portuguese colonies of India, the successes of Francis Xavier (q.v.) are well known. The results of their missions in China and Japan (see RICCI; SCHALL) were even more extraordinary, as also in N. and Central America. Above all, their establishments in the southern continent, in Brazil, in Paraguay and Uruguay, on the Pacific coast, in California, and the Philippine Islands, were missions of civilization as much as of religion; and Sir John Bowring recognizes in the present condition of the native population of the Philippines, the results of the judicious labors of the early Jesuits.

Such was this association in the first stage of its history. At their first centenary jubilee, the members already numbered 13,112, distributed over 32 provinces. At their suppression a century later, they had increased to 22,489, and were possessed of 24 professed houses, 669 colleges, 176 seminaries, 61 novitiates, 335 residences and 275 missionary stations in infidel countries, or in the Protestant states of Europe.

The decline in the fortunes of the Jesuits was rapid and decisive in its consummation. The first blow which they sustained was in Portugal. An exchange of colonial territory having been effected between that kingdom and the crown of Spain, the so-called 'Reductions' of Paraguay (q.v.), in which the Jesuit missionaries possessed an authority all but sovereign, were transferred to Portugal. The native Indians having resisted this transfer, the Portuguese ascribed their disaffection to the Jesuit missionaries. The Portuguese minister, Pombal de Carvalho, to whom the Jesuits allege that their possessions in Portugal had long been an object of desire, instituted a commission of inquiry; and while it was pending, an attempt on the life of the king, Joseph, which was laid to the charge of the Jesuits, furnished him with a fresh ground of impeachment; and without waiting any juridical proof of either accusation, he issued 1759, Sep., a royal decree, by which the order was expelled from the kingdom. The example was followed in other kingdoms. In France, under the Duke de Choiseul, the immediate occasion of the disgrace of the Jesuits was a trial in the civil courts. Father Lavalette, as procurator of the order in Martinique, had consigned to a commercial house in Marseilles two valuable cargoes, which were seized by English cruisers, and Lavalette being unable to meet the bills, the Marseilles merchants proceeded successfully against the order. The Jesuits replied that Lavalette acted not only without the authority of the order, but against its positive constitutions, and appealed to the parliament of Paris against the sentence. The inquiry thus raised presented an opportunity of which the ancient enemies of the order in the parliament eagerly availed themselves. A report on the constitutions of the society, highly damnatory, was speedily drawn up, and

a demand was made for the suppression of the order, as being irreconcilable, in its constitution and practice, with the interests of the state and of society. A strong effort was made to arrest the proceeding; but a powerful court-faction, aided by the secret influence of the royal mistress, Madame de Pompadour, who was irritated by the refusal of her Jesuit confessor to grant her absolution unless on condition of her separating from the king, and supported in the press by the philosophic party, carried all voices, public and private, against the Jesuits. An attempt at compromise was proposed to the general, Father Ricci, by which the obnoxious constitutions might be abolished or modified; but his unbending reply, 'Sint ut sunt, aut non sint' ('Let them be as they are, or let them cease to exist'), cut short all negotiation; and a royal edict was published 1764, by which the society was suppressed in the French territory. This example was followed by Spain, 1767, with great harshness and severity; and by the minor Bourbon courts of Naples, Parma, and Modena. The court of Rome had zealously but vainly interposed in their behalf, and from Clement XIII. especially, they received earnest support. But his successor, Clement XIV. (q.v.), inclining in this and all other questions of church and state to the side of peace, having in vain endeavored to procure from the courts by which they were condemned a relaxation of their severity, and being pressed by the ambassadors of France and Spain, at length issued, 1773, July 21, the celebrated bull, 'Dominus ac Redemptor Noster,' by which, without adopting the charges made against the society, or entering in any way into the question of their justice, acting solely on the motive of 'the peace of the church,' he suppressed the society in all the states of Christendom. The bull was put into execution without delay. In Spain and Portugal alone, the members of the society were driven into exile. In other Rom. Cath. countries, they were permitted to remain as individuals engaged in the ministry or in literary occupations; and in two kingdoms, Prussia under Frederick the Great, and Russia under Catherine, they were even permitted to retain a quasi-corporate existence as a society for education.

What was meant, however, to be the suppression of the society, proved but a temporary suspension. The ex-members continued in large numbers, especially in the Papal States and n. Italy; and soon after the first storm of the Revolution had blown over, measures began to be taken for the restoration of the society. The first overt reorganization of them was 1799, by the Duke of Parma, at an inconsiderable town called Colorno, at which one of the earliest novices was the afterward celebrated Angelo Mai. This proceeding of the Duke of Parma was barely tolerated by the pope; but 1801, Pius VII. permitted the re-establishment of the society in Lithuania and White Russia, and with still more formality in

Sicily 1804. It was not, however, until after the restoration, and the return of Pius VII. from captivity that the complete rehabilitation of the Jesuit order was effected, by the publication of the bull *Solicitudo Omnium Ecclesiarum*, 1814, Aug. 7. In the same year, they opened a novitiate at Rome; and 1824, their ancient college, the Collegio Romano, was restored to them. In Modena, Sardinia, and Naples, they were re-established 1815, also in Spain. They were again suppressed 1820–25, 1835–44, 1854–58, and banished once more 1868. In Portugal, they have never obtained firm footing. Dom Miguel, 1832, issued a decree for their restoration; but the order was reversed by Dom Pedro 1833. Their position in France has been one of sufferance rather than of positive authorization; nevertheless, till of late they were very numerous and influential, and their educational institutions held the very highest rank. In 1880, however, the republic decreed the dissolution of the order, without giving it the alternative of seeking authorization; and in July of that year the members were expelled from all their establishments save the educational, an additional month being allowed them for vacating the latter. In Belgium, they reinstated themselves after the revolution, and they now possess many great establishments, professed houses as well as colleges, largely attended both by Belgians and by foreigners. In Holland, also, they have several considerable houses, as well as in England, Ireland, the United States, and, within a recent period, Scotland. In Switzerland, they opened 1818 a college at Fribourg, which became a flourishing establishment, and subsequently they extended themselves to Schwytz and Lucerne; but the war of the Sonderbund (one of the main causes of which arose from the Jesuit question) ended in their expulsion from the Swiss territory. Of the German states, Bavaria and Austria tolerated their re-establishment for educational purposes. In the Italian province of the former, as also in the Tyrol, they had had a certain freedom until the revolution of 1848. In Russia, they were placed under sharp restrictions 1817; and a few years later, 1820, in consequence of their successful efforts at proselytism, they were banished by a final ukase from the Russian territory, whence they still remain excluded. The Italian revolution of 1848 seriously affected their position in that country. In that year, Pius IX. found it expedient to permit the breaking up of the college and other houses in Rome. They returned, however, with the pope himself, and resumed possession of their ancient establishments. On the proclamation of the kingdom of Italy, they withdrew from Sardinia, Naples, Sicily, and the annexed territory in general. In the recent legislation of the kingdom of Italy, the Jesuits have been visited with a special measure of repression. While each of the other principal religious orders is permitted to retain its 'mother house' at Rome,

in which the general of the order may reside, the Jesuits have been required to quit their principal convent of the Gesu. In Germany also they have been treated with exceptional severity, being held responsible as the main agents and advisers of the measures adopted in the Vatican Council, which are complained of by the government as infringing the rights of the state. By the law of 1873, July 4, the order is excluded from the empire; its establishments are abolished; and all foreign Jesuits are ordered to be expelled, and the German members of the society, as well as of kindred orders and congregations, to be 'interned.'

JESUITS IN THE UNITED STATES.—Jesuit mission work in the United States began soon after 1625, when Jesuit missionaries from France arrived at the newly-settled colony of Quebec, and after providing for the spiritual wants of the colonies dispersed and began preaching to the Huron Indians. In the wars between the Hurons and the Iroquois, several Jesuit fathers were cruelly tortured and put to death by the latter tribe. From the Indian settlements in Canada, some of the missionaries crossed the Kennebec river and began preaching to the Indians in New England, notably the Abenakis tribe, who in a body asked and received baptism. While these French Jesuits were laboring in the e., another party, who accompanied Leonard Calvert on his expedition to the Chesapeake 1633, assisted in founding the Rom. Cath. colony in Maryland, and became the first religious instructors of the early settlers of Maryland, and the Indians in contiguous parts. In 1673 Jacques Marquette (q.v.) French Jesuit missionary and priest, left Quebec with Louis Joliet (q.v.) and a small party, under orders from Frontenac, gov. of Canada, to undertake an expedition of discovery. They had heard of the Mississippi river from some Illinois Indians, and from Green Bay made their way through Lake Michigan, then through the Wisconsin river to the Mississippi river and down that stream to the mouth of the Arkansas river. This discovery of the great w. waterway soon afterward induced adventurers and Jesuit missionaries to follow in Marquette's course for conquest and religious labors. In 1680 and 82 Robert La Salle (q.v.) made two voyages of discovery and established a number of colonies along the rivers of the present states of Ill. and Ind., and these were visited a few years later by Jesuit missionaries, also from Canada. The Jesuits in the United States, numbering (1896) about 1877, are divided among the provinces of Maryland and Missouri, the missions of Massachusetts, Pennsylvania, Maryland, Virginia, District of Columbia, New York, Louisiana, Ohio, California, Colorado, and Alaska, and the special establishments in New York, St. Louis, Cincinnati, Chicago, Milwaukee, New Orleans, Mobile, and other leading cities. The following educational institutions are maintained by them:

Boston College, S. Boston; College of the Holy Cross, Worcester; College of St. Francis Xavier, New York; St. John's College, New York; St. Joseph's, Philadelphia; St. John's, Frederick, Md.; Loyola, Baltimore; Gonzaga, Washington; Georgetown, D. C.; Spring Hill, Mobile; St. Louis Univ., Mo.; College of the Immaculate Conception, New Orleans; St. Charles', Grand Coteau, La.; St. Joseph's, Bardstown, Ky.; St. Xavier's, Cincinnati; St. Ignatius', San Francisco; and Santa Clara, Col.

The literature of the history of the Jesuits, whether hostile or friendly, is almost endless in extent and variety; two works on either side are Gioberti's *Il Gesuita Moderno*, 1847, and Cretineau Joly's *Histoire de la Compagnie de Jesus*, 1845. See also the histories by Wolf, Steinmetz, Guettée; Foley's *Records of the English Province of the Society of Jesus* (5 vols. 1875); De Ravignan, *De l'Existence et de l'Institut des Jesuites* (1844); Huber, *Der Jesuiten Orden* (1873); Genelli, *Life of Saint Ignatius;* Maynard, *Jesuits, their Studies and Teachings* (1855); Michelet, *The Jesuits* (1845); Nicolini, *History of the Jesuits* (1854); Orlandini, *Historia Societatis Jesu* 1540–1625; Parkman, *Jesuits in North America* (1868); Suarez, *De Religione Societatis Jesu* (1634); Thompson, *Footprints of the Jesuits;* Thwaites, *Jesuit Relations*, 73 vols.; Weld, *Suppression of the Society of Jesus* (1877).

JES'UP, Morris Ketchum, American banker: b. Westport, Conn. 1830, June 21; d. N. Y. City 1908, Jan. 23. He was engaged in banking in New York 1852–84, but retired from business in the latter year. In 1881 he became president of the New York City Mission and Tract Society, for which he subsequently erected the DeWitt Memorial Church in Rivington Street, in memory of Rev. T. DeWitt, his father-in-law. He was made president of the Five Points House of Industry in 1872; was a founder of the Young Men's Christian Association, of which he was president in 1872. He was also elected president of the Metropolitan Museum of Natural History in 1881, and of the New York Chamber of Commerce in 1899. To the Metropolitan Museum of Art he gave a collection of native woods valued at $100,000; to the Woman's Hospital in New York city, $100,000; and to Yale University and Williams College, large sums likewise.

JESUS OF NAZARETH, the founder of Christianity, was born at Bethlehem, a village south of Jerusalem and the ancestral home of his family which was descended from David, King of Israel. The birth of Jesus occurred about 5 B.C. during the reign of Cæsar Augustus. The precise date is unknown, and the time of year uncertain, but the event is celebrated by the Christian world at Christmas (q.v.). After a brief residence in Egypt, whither he was taken because of danger to his life through the jealousy of Herod (q.v.) he went to

Nazareth, the home of his parents, where he lived until he was 30 years of age with Mary his mother, and Joseph, his legal father. But one incident is recorded of his youth, a visit to Jerusalem when he was 12 years of age, at which time he gave evidence of unusual interest in the temple and its teachers, and was recognized as a lad of remarkable spirit and power. In Nazareth he learned the trade of Joseph, which was that of a carpenter, and at that trade wrought till the beginning of his public ministry. At the age of 30 he left Nazareth, and resorted to the river Jordan, where his cousin, John the Baptist (q.v.) was preaching and baptizing. There Jesus was baptized, and soon began to preach and gather disciples. The chronology of the ministry of Jesus is uncertain. The familiar plan underlying the ordinary harmony of the Gospels assumes four Passovers within the ministry of Jesus, making a public ministry of about 3½ years. This rests on the assumption that the feasts spoken of in John ii.:13, v.:1, vi.:4, and xiii.:1 were all Passovers, and that Mark ii.:23 refers to a time soon after a passover, and that Mark vi.:39 by its reference to green grass implies a time shortly before a Passover. It is not certain that John v.: 1 is a Passover, and the text of vi.:4 has been questioned, so that there are scholars who hold to a ministry of two and a half and others who would reduce the time to one and a half years. At the outset the teaching of Jesus seemed to differ little from that of John, being an exhortation to 'Repent, for the kingdom of heaven is at hand.' But soon a new and higher element appeared, distinguishing the Gospel from the Law. In the Sermon on the Mount he declared that he had not come to destroy the law or the prophets but to fulfill; but repeatedly he said, 'Ye have heard that it was said by them of old time . . .' and followed the outer and legal prohibition by a declaration of his own which made morality a matter of the heart, and religion a thing of motive instead of external conduct, and formal observance. From the outset the common people heard him gladly, and the feeling of the priests and scribes, which at first was one of indifference, was excited to interest and then to hostility as Jesus attacked one after another of their traditions. A large number of miracles added to the fame of Jesus. These were wrought sparingly in the beginning, no 'sign' following the turning of water into wine for nearly a year (if the three-year ministry be accepted) and the works of healing being accompanied by strict injunctions of secrecy; but such reports could not be kept secret, and Jesus grew famous as a worker of miracles. Teaching and healing became his occupation, and 'he went about doing good.' See MIRACLE.

The crisis of the ministry of Jesus occurred immediately after the feeding of the five thousand. A great multitude of Galilæans, on their way to celebrate the

feast in Jerusalem, saw in this sign the attestation of their hope for a Messiah (q.v.) and pressed him to let them make him king. Jesus spent the night alone in prayer, and in the morning dismissed the multitude with the discourse on the Bread of Life, which discouraged many of his followers who had faith in a political kingdom. From this time his popularity declined; and soon afterward he began to define to his disciples the real spirit of his messianic mission, which involved no military conquest, but only a spiritual triumph in the lives of men. That his plan meant a profound disappointment to all who hoped for a political Messiah, together with an intensifying of the hostility of the leaders in Jerusalem, he knew and they understood. Against the earnest protests of his followers he went up to Jerusalem to the feast of the Passover, entering the city in the manner predicted of the Messiah (Zech. ix.:9). His followers were greatly encouraged, and received him with a demonstration of joy, believing that success was at hand since he had proclaimed himself the Messiah. His opponents were startled by his sudden appearance and the popular uprising, and determined to bring matters to an end, but fearing the people they sought to arrest him in a manner that would preclude a rescue. Sunday, Monday and Tuesday Jesus visited the temple, and was master of the situation. He drove out the money-changers and those who sold animals for sacrifice; he met and confuted those who sought to entangle him in argument. He was secure for the time being against public arrest. But he was betrayed by one of his own disciples, Judas Iscariot, hastily tried before the Jewish authorities, Caiaphas the high priest and his father-in-law Annas, and later by the Sanhedrin, by whom he was adjudged guilty of blasphemy and condemned to death. As the Jews had no authority to execute such a sentence, and blasphemy was not an offense under Roman law, it became necessary to secure a conviction before Pontius Pilate (q.v) the Roman procurator, before whom the charge was sedition. Pilate endeavored to evade responsibility by sending him to Herod, but Jesus was returned for formal trial, and much against the judgment and desire of Pilate, but in response to the clamor of the priests and scribes, was sentenced to death.

If Jesus were crucified in the year 30, the date was Friday, 15 Nisan, or April 7. The place of crucifixion was outside the wall of Jerusalem, probably to the North (See CALVARY; HOLY SEPULCHRE). There, between two brigands, Jesus died upon the cross. He was hastily buried on Friday evening, and his body remained in the grave that night and the whole of the next day and night. Early on Sunday morning, the rock-hewn tomb was found open and empty, though it had been sealed and guarded; and the day was made memorable by a series of appearances of the risen Lord to different

groups of the disciples (See EASTER) which appearances continued at intervals for 40 days. Inspired by the firm conviction that Jesus was living, the disciples gained sudden courage and power. Peasants as they were, and strangers in Jerusalem, they began preaching in the place where hostility was most intense, and the empty tomb was available for inspection. The success of their preaching was immediate. Three thousand were converted in a day, and rapid additions were made to the early church. From that day the followers of Jesus, believing in the reality of his living presence as a mighty force in the life of the world, have aspired to 'go into all the world, and preach the gospel to every creature,' having full faith that he who was born in Bethlehem and suffered under Pontius Pilate, still lives and is destined to a spiritual reign over all the earth.

JE'SUS, COLLEGE OF, Oxford, England: one of the institutions in Oxford University. In 1571 Queen Elizabeth, on petition of Dr. Hugh Ap-rice, or Price, granted a charter for the foundation of this college, in which there were to be a principal, eight fellows, and eight scholars. In 1622, James I. granted the college a new charter, including a code of statutes. These original foundations were set on a new footing 1685 by the will of Sir Leoline Jenkyns, who added considerable endowments to the college, but arranged that the greater part of the fellowships, scholarships and exhibitions should be confined to Wales. The endowments were subsequently increased to 19 fellowships and 18 scholarships. The commissions under 17 and 18 Vict. c. 81, converted five of the fellowships into scholarships, and entirely suppressed one fellowship. Of the remaining fellowships, one moiety was confined to the principality of Wales, and the other thrown open. Four may be lay fellows: the others must take holy orders within one year after they shall be of sufficient standing to be masters of arts. The scholarships are confined to Wales, with the exception of King Charles I.'s scholarships (confined to Jersey and Guernsey), and two others, which are open. There are nearly 30 exhibitions or annual prizes in this college of about £40 per annum. This college presents to about 20 livings, and has ordinarily about 200 names on the books. This was the first Protestant college, and in its statutes the Protestant religion was asserted and guarded by many enactments.

JE'SUS, SOCIETY OF. See JESUITS.

JESUS, SOCIETY OF THE SACRED HEART OF: virtually the Jesuits under another name, established to continue their work after their suppression.—The name was taken also by a society of women, having similar aims, established Paris 1800, approved by Leo XII. 1826. It is zealous in the education of young women and has found

much favor. There are more than 100 establishments in Europe, and there are some in the United States.

JE'SUS, The Son of Si'rach. See Ecclesiasticus.

JE'SUS COL'LEGE, Cambridge, England: one of the institutions in Cambridge University. It was founded 1497 by John Alcock, Bishop of Ely, to whom the king granted for the purpose the nunnery of St. Radegun, suppressed for the dissolute conduct of its inmates. The appointment of the master rests with the Bishop of Ely. There are 16 foundations, and three bye-fellowships, and numerous scholarships. Among distinguished members of this college are Richard Fox, Bp. of Winchester in the reign of Henry VII.; Abp. Cranmer; and Fisher, Bishop of Rochester in the reign of Henry VIII. There are 16 fellows, 32 scholars, and about 85 undergraduates. See Cambridge, University of.

JET, n. *jĕt* [OF. *jetter*, or *jeter*, to east, throw, or fling—from L. *jactārĕ*, to cast or throw: F. *jet;* OF. *get;* It. *getto*, a cast, a throw]: *literally*, a east or throw; a small stream of water or other fluid forcibly emitted; a shoot of water; a gas branch: V. in *OE.*, to fling about the body; to strut about proudly; to shoot out; to jut out; to intrude. Jetting, a. *jĕt'tĭng*, shooting forward or out; in *OE.*, stalking about proudly; jolting. Jet-d'eau, n. *zhā-dō* [F. a throw of water]: an ornamental fountain. Jets-d'eau, n. plu. *zhāz-dō*. Jet-ant, n. *Formica fuliginosa*, species of ant which makes out of masticated wood-dust a nest of card-board, which it manufactures in the stumps of trees.

JET, n. *jĕt* [OF. *jet* or *jayet*—from L. and Gr. *găgātēs*, jet—said to be called from the river *Gagas*, in Lycia]: bituminous mineral of intense velvety-black or brownish-black color. Jetty, a. *jĕt'tĭ*, made of *jet;* black as jet. Jet'tiness, n. *-nĕs*, quality of being jetty; blackness. Jet-black, of the color of jet; of the deepest black.—Jet is not harder than ordinary coal, but is capable of being easily cut and carved, and of receiving a beautiful polish. It is now found in many parts of the world. In Great Britain, it is obtained chiefly at Whitby, Yorkshire, where it is found mixed with fragments of bituminized wood of coniferous trees in the Upper Lias or Alum Shale of that district. Jet is only a peculiar form of pitch-coal, containing about 37½ per cent. of volatile matter, like the Albertite of New Brunswick and some of the cannel coals. It is electrical when rubbed, hence it has been called black amber by the Prussian amber-diggers, when it occurs in sand and gravel beds. Large quantities are obtained in France in the dept. of Aude, where it gives employment to numerous artisans, who form it into rosary beads, crosses and other trinkets, extensively sold in Rom. Cath. countries. Spain also supplies fine jet, which, like that of the French workings, is found in irregular veins

in the lower marls of the cretaceous series, corresponding with the Sussex gault. The Spanish jet is found at Villaviciosa, in the prov. of the Asturias and manufactured at Oviedo. As material for mourning ornaments, jet is admirably adapted, and is used largely in many countries.

JETSAM, n. *jĕt'săm*, or JET'SOM, JET'SON, JETTISON, *jĕt'tĭ-sŭn*, JOT'SON [OF. *jetter*, to throw; Icel. postfix, *samr*, together]: the throwing of goods overboard to lighten a ship; the goods thrown over; goods found thrown ashore without an owner: V. to throw goods overboard a ship in time of danger in such a way that there may be good hopes of their recovery. *Note.*—*Jetsam* is goods thrown into the sea when the ship is in danger; *flotsam*, when goods are floating on the sea after shipwreck (see FLOTSAM); *lagan*, when goods are sunk, but fastened to a buoy or float in order to be found again; *jetsam* is applied to goods disposed of in any way at sea with the view of subsequent recovery.

JET'TISON, in Law [see JETSAM]: the throwing overboard of a ship's cargo, either in whole or in part, in cases of necessity, so as to lighten the vessel in a storm, or to prevent capture, or for other justifiable cause. It is obvious that great discretion is required, so as to judge when the proper time arrives for this desperate expedient; and in case of part only of the cargo being sacrificed, to select which part. Each case must depend on its own circumstances; and the master of the vessel is the authorized agent to bind all parties in such a situation. It often happens that the goods belong to different owners; therefore, to compensate the owner of the particular goods thrown overboard, the doctrine of general average is resorted to (see AVERAGE). In case of a storm, the several persons interested in the ship, freight, and cargo in general contribute ratably to the loss; but there are exceptions when the goods were carried on deck instead of in the hold. When the goods sacrificed by jettison have been insured, the insurer has the benefit of this contribution or average *pro tanto*.

JETTY, n.: black as jet. See under JET 2.

JETTY, n. *jĕt'tĭ* [F. *jetée*, a bank, a pier—from *jeter*, to throw or cast—from L. *jactārĕ*, to cast or throw (see JET 1)]: an erection that juts or projects beyond the rest; any erection jutting into a river or into the sea; a landing-place or pier; sometimes spelled JETTEE, or JUTTY. JETTY-HEAD, that part of a wharf which projects beyond the rest.

JETTY, *jĕt'tĭ:* wall, pier, rampart, or dike, built out from the land into water to improve a harbor or river; distinct in object from a dike which is constructed to prevent lowlands being inundated by the sea or a river. The principal jetties in the world are those

at the mouths of the Mississippi river built by Capt. James B. Eads (q.v.); at the mouths of the Danube, Oder, Pregel, Maas, Memel, Vistula, Liffey, Blyth, Esk, Wear, and Dee rivers; and in the harbors of Calais, Boulogne, and Ostend. Numerous minor ones in important rivers and at river mouths in large lakes in the United States have been constructed by the federal govt. to deepen or widen channels, protect harbors from dangerous winds or currents, or otherwise improve navigation. On the great lakes alone there are about 70 harbors wholly or in part artificial, and examinations have been made at many other points with the view of future improvements. The mouths of the various rivers in Europe that have been artificially improved show a general adaptation of the 'parallel' system of piers or jetties, and the same is true of the artificial harbor at Port Said on the Suez canal, of the sea-entrance of the North Sea canal of Holland, of the Sulina mouth of the Danube, and of the s. pass of the Miss. river. The most notable instances of the artificial improvement of river mouths are in the works of Sir Charles A. Hartley on the Danube, where the depth was increased from 9 to 20½ ft. and of Capt. Eads on the s. pass of the Miss., which he deepened from 8 to 30 ft. In the former case the jetties or piers were designed to be constructed of rip-rap capped with large blocks of concrete; one jetty 5,850 ft. long, the other 4,310 ft.; starting at shore points 2,500 ft. apart, and converging in the water to about 600 ft. apart. The Sulina branch of the river was an open seaboard stream, full of submerged sand banks and wrecks of vessels, with a maximum channel depth of 11 ft., and average of 9 ft., when the work of improvement was begun, 1856. The provisional piers were completed 1861, when instead of the worst harbor Sulina became one of the best for war and commercial purposes on the Black Sea, with a depth of 17 ft. at the bar. The s. pier was afterward lengthened, and the depth of 20½ ft., attained 1872, has been maintained.

The demands of commercial interests for the permanent improvement of the mouths of the Miss. river first received recognition by the federal govt. 1838, when an appropriation was made to begin the work. The earliest system employed was that of dredging, by which a narrow and shallow channel was formed by the action on the deposit of the propeller screws of powerful dredge boats. This system was both slow and uncertain, for in many instances the slight excavations of one day would be filled up with the accumulation of river deposit or by the pushing outward of the bottom deposit by the tide on the next day. The new channel formed by dredging, even in the most favored localities, rarely extended more than 4 ft. below the normal one, and from being constantly imperilled by storms and tides

made navigation by large vessels greatly dependent on towage. At one time a congressional investigating committee found 3 vessels aground on the bar, 17 outside awaiting high water to enter, and 35 inside detained by shallow water. In the 5 years 1872–7 official reports showed that 417 vessels had been aground on or near the s.w. pass bar to the sea. The success of Sir Charles A. Hartley's Danubian improvements led Capt. Eads to urge the application of the parallel jetty system to the s.w. pass, before a congressional convention in St. Louis 1873, May. In the following year a board of U. S. A. engineers appointed to study the whole subject, reported in favor of the construction of a canal through the strip of land separating the river at Fort St. Philip from Breton Bay in the Gulf of Mexico, 40 m. above the mouth, and estimated the cost at $13,000,000. Before this report was submitted, Capt. Eads proposed to the govt. to deepen the s. w. pass bar to 28 ft. by the jetty system at the expense of himself and his associates, no payments to be made till he had secured a depth of 20 ft. His proposition brought the jetty and canal systems before congress, where they were discussed with great bitterness, and bills for beginning work under each were introduced, modified, passed in one house and defeated in the other, and at length wholly rejected. In 1875 the house of representatives again took up Capt. Eads' proposition for the s.w. pass and adopted it; the senate modified it by substituting the s. for the s. w. pass (the s. being the smallest of the 3 passes), and the house concurring, he was authorized to improve the s. pass by the Jetty system at a cost of $5,250,000, of which $500,000 were to be paid on attaining a depth of 20 ft., $500,000 more for 22 ft., and the remainder in similar instalments till the last payment was secured by securing a depth of 30 ft. As this bill involved an entire alteration of his plans and estimates, and forced him to complete over 80 per cent. of the whole work to secure 22 ft. of water and less than one-fifth the total payment, congress almost unanimously voted him $1,750,000 in advance of its terms. The work was begun 1875, June; the 30 ft. were secured 1879, July; and by the natural action of the tide the depth of the channel was increased to 34 ft., 1884, July 1.

At the mouth of the Brazos, west of Galveston, Texas, an ingenious plan was adopted for avoiding interference in the work by flood-tides: A long trestle was built out to deep water above high tide, the mattresses hung under it by ropes, and the stone dropped on them from above to sink them. Instead of being launched from shore and towed, they were carried on a portable railway running on top of the trestle, and let down.

The Columbia river j[illegible] is the most conspicuous

example of the single instead of the double dike. It is 42¾ miles in length, the longest in the world. The bar at the mouth of the river, ever shifting and sometimes not over 12 feet deep, had half spoiled this superb river for navigation, and was greatly dreaded. But the river has a mean high-water discharge of 600,000 cubic feet per second, a mean tidal ebb of 1,000,000, with tides of 6.2 feet; and in 1884 a single curved line of brush mattresses with rubble-stone copings was begun, completed in 1894 to turn the current away from spreading itself on both sides and scour out the channel on one. This was finished in 1894; it has formed a permanent channel 30 feet deep, and made the river a highway of the heaviest ocean commerce, with lines to all Pacific lands.

Others are too numerous for more than brief mention. At Yaquina Bay, Oregon, 115 miles south of the Columbia—an estuary 20 miles long discharging into the sea through a narrow, tortuous, shifting channel, and over a sand-bar with 7 feet of water—parallel jetties about half a mile long, one of rubble-stone on a rock bed, one of brush and stone on a sand bed, have doubled the depth of the water and made the channel calculable. At Galveston, the single jetty was a relative failure, it needing a double one to converge the tides; and in 1896 the government completed it, with sides of 35,000 and 25,000 feet, costing over $8,000,000, and furnishing 27 feet of water between the island and the mainland. Other notable ones are at the mouth of St. John's River, Florida, beginning at the sides of the river-mouth and converging to 1,000 feet apart at the crest of the bar. Charleston's double one has sides of 15,000 feet each.

JEU DE MOTS, phrase, *jė-de-mō* [F.]: play on words; pun.

JEU D'ESPRIT, phrase, *jė-dė-sprē* [F.]: witticism.

JEVONS, *jĕv'onz* WILLIAM STANLEY LL.D.: author: 1835–1882, Aug. 13; b. Liverpool; grandson of William Roscoe, historian. He graduated at Univ. College, London; held an office in the royal mint at Sidney, Australia, 1854–59; became a fellow of Univ. College 1864, prof. of logic and mental and moral philosophy, and Cobden lecturer on political economy in Owens College, Manchester, England, 1866, and prof. of political economy in Univ. College 1876; and gave up academic work for literature 1881. His publications include *Data concerning the Climate of Australia and New Zealand; The Value of Gold* (1863); *The Coal Question* (1865); *Money and the Mechanism of Exchange; Elementary Lessons in Logic* (1870); *Theory of Political Economy* (1871); *The Principles of Science* (1874–77); *Pure Logic* (1864); *The Substitution of Similars* (1869), in which he sought to popularize symbolic logic through a modification of Boole's mathematical

methods; *Primer of Logic* (1876); *Primer of Political Economy* (1878); *Studies in Deductive Logic* (1880); and *The State in Relation to Labour* (1882). Among works published posthumously are: *Methods of Social Reform* (1883); *Investigations in Currency and Finance* (1884); and *Pure Logic* (1890). He received the degree LL. D. from Edinburgh Univ. 1876.

JEW, n. *jô* [OF. *Juis* and *Juifs*, Jews—from mid. L. *Iudæus*, Gr. *Ioudaios*, an inhabitant of *Judæa*—from Heb. *Yehúdáh*, Judah, son of Jacob]: an Israelite; a Hebrew (see JEWS): in accordance with a barbarous prejudice inherited from times of ignorance and persecution—in any dishonest dealings applied to a cheat. JEW'ESS, n. *-ĕs*, a female Jew. JEW'ISH, adj. *-ĭsh*, like a Jew or pertaining to one. JEW'ISHLY, adv. *-lĭ*. JEW'ISHNESS, n. JEW'RY, n. *-rĭ*, Judea; a district inhabited by Jews. JEW'S-STONE, the fossil spine of a large egg-shaped echinus.

JEW, THE WANDERING: subject of an ancient and widely current legend. The legend of the Jew, who cannot die, but, as the punishment of his sin against the Lord Jesus, is obliged to wander over the face of the earth till Christ shall pronounce his doom at the last day, seems to have originated as a vague suggestion of one who should be undying, from the words of Christ concerning the apostle John (Jn. xxi. 22), 'If I will that he tarry till I come, what is that to thee? follow thou me. This saying therefore went forth among the brethren, that that disciple should not die.' It arose, probably in the 13th c., when first it is related by Matthew Paris, and may be supposed to indicate the Jewish people, scattered throughout the world, and nowhere finding a home. According to the current legend, the Wandering Jew is Ahasuerus, the shoemaker at Jerusalem, who, when the Saviour wished to rest before his house, on his toilful way to Golgotha, drove him away. Another legend states him to be Pilate's door-keeper, Kartaphilus, who struck Jesus on the back, as he led him out of his master's judgment-hall. So recently as the last century, imposters took advantage of the belief in this legend, and gave themselves out for the Wandering Jew; and people were not wanting who, from time to time, maintained that he had appeared to them under different forms. A popular book relating in detail the history of the Wandering Jew has been repeatedly printed in German, French, Dutch, and Latin. The legend has likewise been frequently worked up in a poetical form, as by A. W. von Schlegel in *Die Warnung;* by Schubert in *Ahasuer;* by Goethe in *Aus meinem Leben;* by Mrs. Norton in *The Undying One* (1842): and by Eugène Sue in his *Le Juif errant.* Compare Grässe, *Die Sage vom Ewigen Juden;* Gaston Paris, *Le Juif errant* (1880); Moncure Conway, *The Wandering Jew* (1881).

JEWEL, n. *jô'ĕl* [OF. *jouel* and *joycl;* F. *joyau,* a little joy, a jewel—from F. and OF. *joie,* joy, pleasure —from mid. L. *jocālĕ,* a jewel—from L. *jocus,* sport, toying: It. *giojello,* all manner of jewels—from *gioja,* delight, a jewel: Sp. *joycl,* a jewel]: an ornament, generally of precious metal or valuable substance; a gem; a precious stone; a name of fondness: V. to adorn with precious stones; to place the balance of a watch upon a diamond. JEW'ELLING, imp. JEW'ELLED, pp. *-ĕld:* ADJ. adorned with jewels; running on diamonds, as certain parts of a watch. JEW'ELLER, n. *-lĕr* [OF. *joyallier*]: one who makes or deals in jewels, as in silver and gold and ornaments. JEWELLERY, n. *jô'ĕl-ĕr-ĭ,* or JEW'ELRY, n. *-ĕl-rĭ,* jewels and ladies trinkets in general. JEWEL-CASE, a case for keeping gems and ornaments in. JEWELLERS'-GOLD, gold with an alloy of copper and silver in varying proportions, but not of the standard fineness. JEWELLERS'-ROUGE, a kind of red putty powder, used for polishing jewellery.

JEWEL, *jô'ĕl* (or JEWELL), JOHN, D. D.: 1522, May 24–1571, Sept. 22; born Buden, Devonshire, England: bishop of Salisbury. He was educated at Oxford University, appointed tutor there and disseminated the principles of the Reformation, publicly professed Protestantism after the accession of Edward VI., was expelled from the University by the Catholics in the reign of Mary, and on the invitation of Peter Martyr spent some time teaching in Strasburg. On the accession of Elizabeth he returned to England, was appointed one of 8 divines to hold a controversy with 8 Catholic divines in Westminster, and a member of the commission to suppress Rom. Catholicism in w. England; and was consecrated bishop of Salisbury 1560, Jan. 21. By order of Elizabeth a copy of his most famous work, *Apologia Ecclesiæ Anglicanæ* (1562) was chained in every English church for public perusal.

JEW'ELL, MARSHALL: 1825, Oct. 20—1883, Feb. 10; b. Winchester, N. H.: manufacturer. He learned the tanner's trade with his father; removed to Rochester, N. Y., and learned telegraphy, 1847; was engaged three years in telegraph construction in Ohio, Tennessee, Mississippi, and the s. w. states; and became a partner of his father and brothers in the leather-belting business in Hartford, 1850, remaining so till death. He was a warm supporter of the Union during the civil war, was elected gov. of Conn. 1869, 71 and 72, appointed U. S. minister to Russia 1873, recalled and appointed by President Grant U. S. postmaster-gen. 1874, defeated by two votes for the U. S. senate 1879, and was chairman of the national republican committee during the presidential campaign 1880. The new statehouse in Hartford was erected during his administration as gov.; he negotiated a convention for

protecting trademarks and, while minister to Russia, secured information that led to the introduction of the Russian process of tanning into the United States. He supported Secretary Bristow in his prosecution of the whiskey ring; and, while in Pres. Grant's cabinet, inaugurated the reforms that led to the star postal route trials.

JEW'ELLERY, or JEWELRY: jewels or trinkets in general. The manufacture of jewels has in all times been a test of the artistic powers of a nation; for, being intended mostly for personal adornment, the aim of the jeweller has been to produce the largest amount of beauty in the most limited space. It is probable that the wearing of ornaments of gold and silver was almost as early as the discovery of those metals. A mere hole drilled through the small pieces of gold or silver, to enable them to be strung round the waist or neck, would be the first stage; then, when the ductility of the metals became known, they would be beaten probably into bands or rings, giving rise to ring-money; these rings, when increased in size, would become torques for the waist, neck, arms, or ankles, labrets for the lips, and rings for the ears and fingers. As refinement increased, these articles would be made more and more ornamental; and the original object, of mere convenience and safety in carrying the much-valued metals, would be lost in the secondary one of personal adornment; the art of the goldsmith would be called into play, and the taste of the nation would be marked by the good or bad designs in demand for this purpose. Jewels being articles of luxury and taste, their possession always indicates to a certain extent the wealth of nations, and we are as much impressed with the advanced state of the ancient Egyptians by the nice art and refined taste exhibited in the jewelry found in their tombs, as by the vast architectural works of which they have left so many remains; indeed, modern art, with all its wondrous advances, cannot do more than equal the exquisite workmanship of those elegant golden jewels sent by the late viceroy of Egypt and M. Mariette to the International Exhibition, which were taken from the tombs of ladies of distinction, of whose mummies they had been the decorations. There is an essential difference between the jewelry of ancient and modern times. Our goldsmiths depend much on the processes of casting, drawing, stamping, and other metallurgical operations, and produce thereby great accuracy of outline and high finish. The ancients wrought by hammering, chasing, and *repoussé*, depending entirely on the taste and skill of the artist, instead of the perfection of his tools and mechanical arrangement; consequently, their works bear the stamp of artistic production, while modern works, however beautiful, have usually the character of mere manufactures executed with mechanical precision rather

than artistic taste; and what they gain in nicety of finish is more than counterbalanced by what is lost in richness of effect. See GILT JEWELRY; also DIAMOND.

JEW'ELS, in Heraldry: absurdly and needlessly introduced to designate the tinctures of the arms of peers e.g., argent is pearl or crystal; or, topaz; gules, ruby; azure, sapphire; sable, diamond; vert, emerald; and purpure, amethyst.

JEWETT, *jô'ĕt*, CHARLES COFFIN: 1816, Aug. 12—1868, Jan. 9; b. Lebanon, Me.: librarian. He graduated at Brown Univ., 1835, studied theol. at Andover Theol. Seminary, and became librarian there; studied oriental languages and antiquities with a view of becoming a missionary, was appointed librarian of Brown Univ. 1841 and prof. of modern languages there 1843, studied the library systems of Europe and made large purchases of classical works, was appointed librarian and asst. sec. of the Smithsonian Institution 1848, and resigned to accept the office of supt. of the Boston Public Library 1858, with which he remained till death. His publications include *Facts and Considerations relative to Duties on Books* (1846); the text-Book on library economy *On the Construction of Catalogues of Libraries and their Publication by Means of Separate Stereotyped Titles, with Rules and Examples* (1852); and *Notices of Public Libraries in the United States* (1854).

JEW'ETT, SARAH ORNE: author: b. S. Berwick, Me., Sep. 3, 1849; daughter of Theodore Herman Jewett, M.D. She received an academical education, has traveled extensively in various parts of the world, and beside contributions to newspapers and magazines has published *Deephaven* (1877); *Play-Days* (1878); *Old Friends and New* (1880); *Country By-Ways* (1881); *The Mate of the Daylight* (1883); *A Country Doctor* (1884); *A Marsh Island* (1885); *A White Heron* (1886); *The Story of the Normans* in the *Story of the Nations* Series (New York 1887); *The King of Folly Island, and Other People* (1888); *Betty Leicester* (1889); *Strangers and Wayfarers* (1890); *A Native of Winby, and Other Tales* (1893); *The Life of Nancy* (1895); *The Country of the Pointed Firs* (1896); *The Queen's Twin and Other Stories* (1899); *Betty Leicester's Christmas* (1899); *The Tory Lover* (1901); etc. Her literary style possesses great charm.

JEW'FISH, a huge California game-fish (*Stereolepis gigas*) of the sea-bass family (*Serranidæ*). It has a single dorsal fin, the soft part of which is shorter than the spinous portion, and is brown with black blotches and becomes much darker with age. Among the dense growths of kelp in moderately deep water along the coast of southern California the jewfish finds a congenial home. It haunts the neighborhood of islands and is especially abundant about Santa Catalina. Belonging

to a family of game-fishes and reaching a weight of 300 to 500 pounds, it has long been a favorite object of sport for ambitious anglers. It is commonly taken on hand-lines baited with small fish, is exceedingly gamy, and brings a good price in the market.

Two other fishes of the same family but more closely related to the groupers are known as the Florida or black jewish (*Garrupa nigrita*) and the spotted jewfish (*Promicrops guttatus*). The former ranges from Florida to Brazil, and the latter widely through the warm parts of both Atlantic and Pacific oceans. The black jewfish is quite common about the coral reefs, in the caverns of which it lurks. Although not especially gamy, its enormous size and weight, sometimes reaching even 1,000 pounds, have induced a few anglers to essay its capture with rod and reel. It is easily distinguished from the California jewfish by its greater robustness, strong canine teeth, and rounded caudal fin. Consult Jordan and Evermann, *American Food and Game Fishes* (1903); Holder, *Big Game Fishes of the United States*.

JEWISH CALENDAR: the Jews date their era from the Creation, which according to their tradition was 3760–1 years before the Christian era. The Jewish year is a lunar year and consists of twelve months, with an additional one for leap year. The months have alternately 29 and 30 days, the first and thirtieth days being called New-moon. Each cycle of 19 years has 7 leap years, the 3d, 6th, 8th, 11th, 14th, 17th, and 19th. The spring months are called Nisan (in which the Passover is celebrated), Iyar, Sivan; summer includes Tammuz, Ab, Elul; autumn Tishri, Heshvan, Kislev; and winter Tebeth, Shebat, Adar, with 2d Adar for leap year. The civil year began with the month of Nisan; the religions with Tishri. Rules for the computation of the calendar were issued, after various methods had been employed in earlier centuries, by Hillel II. (330–365). The date usually assigned by Jewish writers to the year when Hillel fixed the calendar is 670 of the Seleucidan era, or 4119 A.M., or 359 of the Christian era.

JEWISH CHAUTAUQUA: founded in 1893 by Rev. Dr. Henry Berkowitz of Philadelphia, and incorporated in 1899, with a body of officers representing the chief cities in the United States. This society has about 3,000 members, divided into various sections. Its courses include preparatory, two years, with readings in Jewish history and literature; Bible, four years; and special courses in post Biblical history and literature, *Jewish Characters in English Fiction*, *Beginners and Advanced Hebrew*. Its chief work of late years has been embodied in its summer assembly at Atlantic City, N. J., which is held annually in July and lasts three weeks. It includes a summer school, popular lectures and conferences,

literary and social entertainments, in which many prominent speakers participate. During the session of 1903 the condition of religious schools, dependent and delinquent children, how to relieve congestion in large cities, the status of the Jews of Russia, the attitude of Jewish university students toward Jewish problems, were the topics discussed. The average attendance at the morning sessions was from 150 to 350 persons and at the evening from 300 to 800 persons. During the summer of 1903 an English organization on the plan of the Jewish Chautauqua was formed at Ramsgate.

JEW'ISH LIT'URGY. See LITURGY.

JEW'ISH SECTS: term generally applied (after Josephus) to certain divergent schools which grew up in the midst of Judaism, subsequently to the Syrian wars. So far, however, from forming, as the word would seem to imply, separate communities with places of worship and a religious law of their own, antagonistic to that of their brethren, the disciples of the different 'sects' belonged to the same religious community, adhered to the same practical religious Law, and consequently could not well look upon each other as heretics. The chief points at issue were certain abstract doctrines, in connection with the peculiar manner in which this Law, as far as it is contained in the Scriptures, was interpreted and further developed. While the *Pharisees* (q.v.) claimed for certain time-hallowed observances and doctrines not found in the Bible a divine origin, tracing them back through tradition—orally transmitted from generation to generation—to Moses and Sinai itself, and while they, by peculiar rules of an exegesis of their own, proved these same doctrines to lie often latent, as it were, in the very letters of the Bible—the *Sadducees* (q.v.) rejected the divine origin of the 'oral law,' as well as certain spiritual dogmas not distinctly set forth in the Sacred Record. In large part the division between these two parties was political. An advanced or exalted class of Pharisees were the *Essenes* (q.v.), who formed a kind of brotherhood, far away (with only rare exceptions) from the corruption of cities, intent chiefly on the exercise of practical virtues, and ruled by a severe code of morals. For the tenets of each of these three 'sects,' see their titles.

At a later period, shortly before and after Christ, numerous divergent religious doctrines, mostly the result of a confused mixture of Judaism and Hellenism, or rather Alexandrianism (see GNOSTICS), were promulgated, and found adherents both within and without the pale of Judaism. Very obscure are the names and origin of these 'sects,' many of which are recorded by the early fathers of the church, but very little is known respecting their history and dogmas. Among these may

be mentioned the *Böethuseans*, the *Herodians, Galileans, Menachemists, Samaritans, Chassidens, Hemerobaptists, Hillelites, Sabbatians, Gaulanites*, etc.

In the 8th c. (761 according to Munk), the Sadducean doctrine of the invalidity of 'oral law'—a doctrine which had died out after a brief existence—was revived by Anan ben David, supposed to have held a high spiritual office (Resh Gelutha? Gaon?) at Bagdad at the time of Caliph Abu Giafar Al-Mansor (754-775), and who, rejecting the Talmud and Midrash as the work of man, allowed only such laws and ordinances to be binding on the community as resulted immediately from a simple and natural Scriptural exegesis. He thus became founder of the most important sect of the *Karaites*, who, within an astonishingly brief period, spread over Palestine, Egypt, Greece, Barbary, Spain, Syria, Tartary, Byzantium, Fez, Morocco, and even to the ranges of the Atlas. They are now, however, found only in very small numbers in Poland, Galicia, Odessa, the Crimea, Constantinople, Jerusalem, and Alexander. Abrogating the 'rabbinical' traditions, they erected a new traditional system of their own, to be altered and freely developed by each of their successive spiritual heads. Prayer, fasting, pilgrimages to Hebron, are the points of religious practice to which they give greatest attention. Their general conduct is even by their antagonists allowed to be of the highest moral standard. They have produced an extensive special Hebrew literature, chiefly works on theology, philosophy, mathematics, astronomy, etc. The greatest number of these is now found in the Imperial Library at St. Petersburg. Some of their principal authors are Anan, Shalmon b. Jeruham, Joseph b. Noah, Jeshua, Jehudah Hadassi, Aron b. Joseph, Aron b. Eliah, Eliah Beshitzi, Kaleb, Moses Beshizi, Mardochai b. Nissan, etc.

Another sect, known as the *Sabbathaians*, was founded by Sabbathai Levi from Smyrna (1625-77), who proclaimed himself the Messiah, and found numerous followers throughout Germany, Poland, Italy, and Holland. Sultan Mohammed IV., however, put an end to his mission by imprisoning him, and making him adopt Mohammedanism. Many of his disciples followed his example, others turned Rom. Catholics—adhering, withal, to their former doctrines and tenets, consisting chiefly of the belief in the Messiahship of their master, a distinct leaning to the dogma of the Trinity, and the abandonment of the hope of a final return to Jerusalem under the guidance of 'Messiah ben David.' They put a thoroughly mystical interpretation on the Bible, rejected unconditionally the Talmud, and extolled their special Kabbalistic gospel, the Zohar, above all things created. This sect did not die out until the end of the last century, Jacob Frank, their last supreme pontiff (whose intimate friends and followers called themselves after his name *Frankists*), dying in a debtor's prison on the Rhine (1791).

We have finally to mention the modern *Chasidim*—not to be confounded with the ancient Chasidim (q.v.)—or Beshters (Baal Shem Tob), a side branch of the former sect, taking its stand like this on the Kabbala, but remaining ostensibly within the province of rabbinical Judaism. They are remarkable chiefly by their mode of praying, their supreme contempt for any but mystical and religious science, and their belief in the miracles wrought by their temporary chiefs or saints (*Zaddik Baal Shem*). They are very numerous in Poland, Galicia, Russia, and Palestine. A favorable idea of this sect is given by Schechter, *Studies in Judaism* (Phila. 1896).

The modern 'Reformers,' aiming chiefly at a simplification of the ceremonial, and abrogation of what they consider to be abuses and late additions in the divine worship, cannot well be called a sect—though, for the most part, they have synagogues and prayer-books of their own—since they belong to all other intents and purposes, to the great body of the Jewish community. As the chief promoters of this movement may be considered Zunz, Geiger, Chorin, Creizenach, Holdheim, Hess, Stern, etc. This movement has made the greatest headway in the United States, where it has its seminary organs, and numbers of prominent adherents. Among their leaders are included I. M. Wise, D. Einhorn, M. Lilienthal, J. Krauskoff, E. G. Hirsch, G. Gottheil, J. Silverman, D. Philipson, K. Kohler, etc.

JEWISH WOMEN'S COUNCIL.—Founded September 1893, this organization has been of marked value in awakening the interest of American Jewesses in the history and literature of their special creed as well as in developing among them modern methods, educational and charitable. Affiliating with the National Council of Women, it has arrayed on a common platform its representatives. The Council consists of 64 active sections, with about 8,000 members, and 16 junior sections, with about 500 members. There are 82 study circles, 2,000 members, studying Jewish history and literature, and 12 circles studying methods in philanthropy. It has 18 religious schools among the poor, with 19 paid and 141 volunteer teachers, reaching 2,500 pupils. Thirty-three sections carry on activities in philanthropy, with settlements, sewing and industrial schools, five kindergartens, one manual training school, two gymnasiums, two free baths, two day nurseries, four personal service groups, two kitchen gardens, and other forms of useful activity, often open to all creeds. Cooperation is encouraged with the State Federation of Women, International Congress of Women, the National Jewish Hospital for Consumptives at Denver, Colo., and other bodies.

JEWS [corrupted from *Yehudim* (see JEW)]: name given, since the Babylonian captivity, to the descendants of the patriarch Abraham, who, about B.C. 2000 (according to the conjectured but improved chronology), emigrated from Mesopotamia, on the e side of the Euphrates, to Canaan or Palestine. They were called originally HEBREWS (q.v.). Monotheism, or a belief in one God, the practice of circumcision, and the expectation of ultimately possessing the land in which they then sojourned, were the three distinguishing peculiarities transmitted by Abraham to Isaac, and from Isaac to Jacob and his descendants. The picture of patriarchal life in the book of Genesis is marked by an impressive naturalness and simplicity, and bears traces of a great antiquity. In consequence of a famine in Canaan, Jacob, on the invitation of his son Joseph, who had become chief minister of the king of Egypt, went down thither with all his household, which numbered 70 'souls;' and obtained from Pharaoh permission to settle in the land of Goshen. Here the Hebrews resided (Exod. xii. 40) 430 years [Bunsen (EXODUS) calculates 14 centuries]; according to the genealogical table of the Levites, Exod. vi. 16–25, however, their sojourn would not have lasted longer than 210 or 215 years; most of the commentators, therefore, take, with Josephus, the 430 years to indicate the period from Abraham to the Exodus (see Gal. iii. 17). The interpretation of the chronology of this period cannot be regarded as settled. During the lifetime of Joseph, and probably for some generations afterward, they were well treated, and prospered; but a new dynasty, supposed by some—with doubtful reason—to have been that of the Hykshos (q.v.) arose, and they were reduced to relentless slavery. A deliverer at length appeared in the person of Moses (q.v.), a man of grave and heroic character, who, though brought up by the daughter of Pharaoh as her son, and trained in all the learning of the Egyptians, was nevertheless filled with an intense and indignant patriotism, that acquired elevation from the ardor of his religious feelings. The circumstances that preceded and characterized the exodus (about. B.C. 1600)—such as the ten plagues and the crossing of the Red Sea—are a source of continual controversy between the Rationalistic and the Supranaturalistic schools of biblical criticism; but the *fact* of an exodus would be disputed only by the wildest skepticism. The entire history of the people is pervaded by the memory of this grand event, on which their national existence is based; it inspires their poetry, and consecrates their religion; and the Passover, with all its ceremonials and mementos, was instituted expressly to remind them of that wondrous night of sudden liberation; while the Feast of Tabernacles was to recall to the memory of latest generations the wanderings through the desert; and Pentecost, the act of the legislation on Sinai. Whether, however, in 215, or even in 430 years, the seventy 'souls' could have increased to 600,000 adult men, or, including wives and children, to between 2,000,000 and 3,000,000 souls, is a point to be determined rather by physiologists than by theologians. Again, it is to be

noted that as definiteness in the chronology of this period is not attained by modern interpreters, so neither is it essential to the general purpose of the sacred history.

The wandering in the wilderness of the Sinaitic peninsula is said to have lasted 40 years, though a record of the events of two years only has been preserved. These, however, are obviously the most important, as they contain an elaborate account of the giving of the law (Exod. xix. *et seq.*), which is represented as a direct revelation made to Moses by Jehovah himself, who descended upon Mount Sinai in fire, amid thunders and earthquakes. The antiquity, however, of the priestly or ecclesiastical portions of the Pentateuch is keenly disputed by many modern scholars of high reputation, who endeavor to show the probability of such passages having been composed and inserted subsequent to the great organization of the priesthood by David; and in proof of this, point, among other evidences, to the Book of Judges (q.v.), which narrates the history of the Hebrews for 300 years *after* the conquest of Canaan, and which yet contains scarcely a trace of the existence of a religious institution among them. Yet it is allowed on almost all hands that the *foundations*, at least, of the Jewish theocracy, probably also a large part of the superstructure, were the direct work of Moses himself, who indeed appears to have been pre-eminently fitted for the task of a legislator:—not to enlarge on the fact that the ritualism of the Hebrews has many striking points of contact with that of the ancient Egyptians, with which he was well acquainted. This view does not settle the question of a later composition of the Pentateuch (q.v.), in its present shape and with its successive redactions and enlargements. But whatever period be allowed for the sojourn in the desert, the rough nomadic life, the frequent fighting with the fierce Bedouin tribes, through whose territories they passed—besides the lofty influences of a stern religion requiring the worship of the One Living God, the holy and almighty spirit—had transformed the runaway slaves of Egypt, by the time they approached the eastern borders of Canaan into a nation of high-spirited and irresistible warriors.

Before proceeding, it behooves us to trace a general outline of the Mosaic legislation. The laws promulgated under the 'Covenant' were not entirely new. Many were merely the solemn confirmation of ancient patriarchal tenets, such as the worship of One Supreme Being through sacrifices, prayer, vows; circumcision; the government by heads of tribes and families, etc. Other must have been adaptations of Egyptian institutions. Others, again, owed their existence to the altered circumstances of the community; and it is undeniable that some of the special ordinances contained in the Pentateuch were not carried into practice. The fundamental features of the religious as well as political constitution—closely interwoven with each other—are the following: God is Creator and Lord of the universe. The universe is His own, and to man the use of all created things has been intrusted by His will. God is therefore

the King of the people. By the priests He is visibly represented. No man has the right to dispose of his own liberty. The soil is given to the people for only the *usufruct:* 'the land is *Mine,*' saith Jehovah: man has no further individual right of possession over it. Every seventh year it is to be left to itself as keeping a sabbath to the Lord. The absolute sale of land is prohibited; and after seven times seven years, every lease and mortgage of it is null and void, and it is to return to the heirs of those to whom it was originally assigned at the first division of the land.

The office of the Priests (q.v.) was in the hands of the tribe of Levi (q.v.), especially the descendants of Aaron (q.v.). The Levites assisted in the management of the sanctuary and the holy rites, copied and expounded the Books of the Law, kept the genealogical lists, and had the care of the general instruction of the people. Together with the priests, they had administrative and judicial functions, giving judgment always in the name of God. The High-Priest (q.v.) constituted the highest court, and his was the oracle (Urim and Thummim). Periodical Feasts (q.v.) were instituted, in order that the dependence from the Divine King should always be kept in view by the people. Every seventh day the body should rest from labor (Sabbath), as every seventh year the soil was to rest (Sabbatical year); and every fiftieth ($7 \times 7$) year (Jobel) was the great year of Remission or of Jubilee. Three annual feasts, partly agricultural, partly historical, were the Pesach (see PASCH: PASSOVER), the Feast of Weeks (q.v.) and the Feast of Tabernacles (q.v.). No less was the first of the seventh month to be kept holy. The tenth of the same month was instituted a day of atonement and forgiveness of sin.

The form of government was at first theocratic The people was divided into 12 tribes, which formed small republics, but all united under the invisible rule of Jehovah. General national assemblies decided on war and peace, and the like. Special provisions are found also for the contingency of the election of a king. After the conquest of Palestine, every city had a judge, chosen by the heads of the families and tribes. The punishments were either death, flagellation, or fines. Three Levitical cities were named by Moses as asylums or places of refuge for manslayers whose guilt was not yet fully established. Every free citizen was bound, from his 20th year, to military service in case of war. To the besieged city—having in view the cities of the Canaanites with their frightfully polluting and corrupting idolatry—terms of capitulation were first to be offered; were these rejected, the city was to be taken, and the males were to be put to the sword. In all other cases, the virtues of charity, justice, and kindness, even toward animals, are repeatedly impressed upon the people. How far these fundamental rules were either further developed or neglected, we cannot show in this place.

The 'land of promise' became theirs at last (about B.C. 1430), under Joshua (q.v.), successor of Moses. Tribe

after tribe of the abominated Canaanites was swept from its ancient territory, and for the most part either annihilated or forced to flee. Yet the whole bulk of the native inhabitants was not extirpated or wholly expelled, nor even subdued till a much later period: a neglect of the Divine command fraught indeed with the most disastrous consequences to the new commonwealth. The country was now divided among the tribes. The magnificent pastoral region of the Jordan had been chosen by the tribes of Reuben, Gad, and the half-tribe of Manasseh at an earlier period, because they 'had a very great multitude of cattle' (Numb. xxxii. 1); but they now for the first time entered on possession of it. The land w. of the Jordan was parcelled out to the remaining—Judah, Simeon, Dan, Benjamim, Ephraim, the second half-tribe of Manasseh, Issachar, Zebulon, Naphtali, and Asher. The tribe of Levi received, instead of a province, 48 cities scattered throughout Canaan, and the tenth part of the fruits of the field, and were allowed generally to settle individually throughout the land were they chose (see LEVITES: PRIEST: HIGH-PRIEST).

After the death of Joshua (about B.C. 1530), the want of a chief to the young state became sadly palpable. Little regard was paid to the Mosaic institutions; the single tribes pursued their own individual interests; intermarriages with the vile idolatrous natives weakened the bond of union still further; and the next consequence was, that the tribes were singly subdued by the surrounding nations. At this juncture there arose at intervals valiant men and women—Shofetim—Judges, who liberated the people from their oppressors, the Moabites, Philistines, Ammonites, Amalekites, etc. Of the 15 judges named, some appear to have been contemporary with each other, and to have exercised authority in different parts of the country. This period constitutes the 'heroic' age of Hebrew history. Among these judges, the prophetess Deborah (q.v.), Gideon (q.v.), Jephthah (q.v.), the herculean Samson (q.v.), and the prophet Samuel (q.v.), are especially notable; the last mentioned was, in every sense of the word, the greatest Hebrew that had appeared since the days of Moses. With him began a new and higher stage in the development of the national character, chiefly through the instrumentality of the priestly order, whose spiritual, for the most part well-directed and humanizing, influence was by him first exalted and most distinctly brought to bear upon the commonwealth. Samuel, first of the prophets, was also last of the republican chiefs of the confederate tribes. Wearied of their intestine feuds, harassed by the incursions of their predatory neighbors, chiefly, however, goaded by the characteristic desire 'to be like all the other nations (I Sam. viii. 5), the people compelled him, when he had become 'old and gray-headed' (I. Sam. xii. 2)—while the behavior of his sons, whom he had made judges, unfitted them to be his successors—to choose for them a king (B.C. 1080).

The first who exercised regal authority was Saul (q.v.).

the Benjamite. But though a distinguished warrior, and a man of royal presence, he appears not to have possessed the mind of a statesman; and his wilfulness, and the paroxysms of insanity, brought on chiefly, it seems, by the openly-expressed dissatisfaction of Samuel on account of his disobedience of God, finally alienated from him many of the bravest and best of his subjects. After his death on Mount Gilboa, David (q.v.), his son-in-law, was proclaimed king. This monarch was by far the greatest that ever sat on the throne of Israel. He ruled, as is commonly computed, B.C. 1058–18. His reign, and that of his equally famous son, Solomon (q.v.), are regarded as the golden time of Hebrew history. The remaining aborigines of Canaan and its borders—the Philistines, Edomites, Amalekites, Moabites, etc.—were thoroughly subdued; the boundaries of the Hebrew kingdom were extended as far as the Euphrates and the Red Sea; Jerusalem, till David's time held by the Canaanites, was captured by escalade, and made the capital of the conqueror; the priesthood was reorganized on a splendid scale; the arts of poetry, music, and architecture were cultivated; schools of prophecy (established, probably, by Samuel) began to flourish; a magnificent temple for the worship of Jehovah was built in the capital; and commercial intercourse was carried on with Phœnicia, Arabia, Egypt, with India and Ceylon, perhaps with even Sumatra, Java, and the Spice Islands. But there was a canker at the root of all this prosperity. The enormous and wasteful expenditure of Solomon forced him to lay heavy taxes on the people. His wealth did not enrich them; it rather made them poorer; he multiplied to himself heathen wives; and though gifted with transcendent wisdom and most brilliant mental powers, toward the end of his life he presents the sad spectacle of a common eastern despot, vuluptuous, idolatrous, occasionally even cruel, and his reign (B.C. 1018–978) cannot but be regarded, both politically and financially, as a splendid failure. After his death, B.C. 978, the Hebrew monarchy, in which the germs of dissension—chiefly jealousy against the influence of Judah—had been silently growing up for many a year, split under Rehoboam into two sections (B.C. 975): the kingdom of Judah, under Rehoboam, son of Solomon; and the kingdom of Israel, under Jeroboam, the Ephramite. The former of these countries comprised the two tribes of Judah and Benjamin, together probably with some Danite and Simeonite cities; the latter, the remaining ten tribes. After 19 kings, of different dynasties, among whom Jeroboam, Ahab, Joram, Jeroboam II., Pekah may be mentioned, had reigned in Israel, few of whom succeeded to the throne otherwise than by the murder of their predecessors, the country was finally conquered by Salmanassar, King of Assyria; its sovereign, Hoshea, thrown into prison; the mass of the people carried away captive (B.C. 720) into the far east, the mountainous regions of Media; and their place supplied by Assyrian colonists, brought from Babylon, Persia, Shushan, Elam and other places by Asnappar. These, mingling and in

termarrying with the remnant of the Israelites, formed the mixed people called Samaritans (q.v.). Among the 20 kings of the House of David who ruled over Judah, Jehoshaphat, Uzziah, Hezekiah, and Josiah distinguished themselves both by their abilities as rulers, and by their zeal for the worship of Jehovah. Yet even they were, for the most part, unable to stay the idolatrous practices of the people, against which the stern prophets' voices even could not prevail. Other kings were, for the most part, more or less unfaithful themselves to the religion of their fathers, and unable to withstand the power of the Egyptians, Assyrians, and Babylonians, to each of whom they in turn became tributary, until at last Nebuchadnezzar stormed Jerusalem (B.C. 588), plundered and burned the temple, put out the eyes of King Zedekiah, and carried off the most illustrious and wealthy of the inhabitants prisoners to Babylon. The Israelites, who had been exiled 134 years before the inhabitants of Judah, never returned. What became of those 10 tribes has always been, and, we presume, will remain, matter of vaguest speculation. See BABYLONIAN CAPTIVITY.

All that we know of the condition of the Hebrews during the captivity, relates exclusively to the inhabitants of the kingdom of Judah. And so mild, especially during the later years, was the treatment which they received in the Babylonian empire, that when liberty was announced to the whole body of the captives, only the lowest of the low returned, together with the Levites and Priests (cf. Talm. Kidd. iv. 1). The Book of Esther likewise bears testimony to the vast numbers that had remained scattered over the vast empire. See BABYLONIAN CAPTIVITY.

The influence of this exile, however, was of a most striking and lasting nature. Babylon henceforth became and remained, till about A.D. 1000, the 'second land of Israel'—in many respects even more highly prized than Palestine. To the brief period of this captivity must be traced many of the most important institutions of the synagogue in its wider sense. Common religious meetings, with prayer, were established; many of the Mosaic laws were re-enforced in their primitive rigor; and the body of the 'oral law' began to shape itself, however rudely, then and there. Besides, there began to grow up and unfold itself from the original germ the belief in a Messiah, a Deliverer, one who should redeem the people from their bondage. The writer of the last 27 chapters of Isaiah, called by many modern scholars the 'Younger Isaiah,' in accordance with their theory of the authorship of that book (see ISAIAH), is held by these scholars to belong to this period, and expresses in glowing language the hopes of the exiles; no less do many of the Psalms belong to this time. 'From this period, likewise, the immortality of the soul, and the belief in another life, appear more distinctly in the popular creed, in which . . . they had been obscured by the more immediate hopes and apprehensions of temporal rewards and punishments revealed in the law. But in the writings of the Babylonian prophets, in the vision of dry

bones in Ezekiel, and in the last chapter of Daniel, these doctrines assume a more important place; and from the later books, usually called the Apocrypha, these opinions appear to have entered into the general belief. In other respects, particularly in their notion of angels, who now appear under particular names, and forming a sort of hierarchy, Jewish opinions acquired a new and peculiar coloring from their intercourse with the Babylonians' (Dean Milman's *History of the Jews*, Lond. 1829, II., 13, 14). See ANGELS: DEMONS: DEVIL.

The exile is generally computed to have lasted 70 years. This is not strictly correct; it lasted 70 years, if reckoned from the appearance of Nebuchadnezzar in Anterior Asia (606), but only 52 years from the destruction of Jerusalem. When Cyrus, the Persian king, had overthrown the Babylonian kingdom (B.C. 538), the condition of the Hebrews improved considerably. The new monarch must have felt that he could rely on them, as being really strangers in the land, and necessarily more or less hostile to their conquerors, the Babylonians. The Hebrew prophet Daniel rose higher and higher in dignity and power, and finally became 'supreme head of the pashas to whom the provinces of the vast Persian empire were committed.' Through his influence, Cyrus was prevailed on to issue an edict permitting the exiles to return home. A minute account of the circumstances attending this joyous event is given in the Books of Ezra and Nehemiah. More than 40,000 persons, including four of the 24 courses of priests, set out under the leadership of Zerubbabel, descendant of their line of kings.

Notwithstanding the many and harassing obstacles raised by the Samaritans—the mixed people of Assyrians and Israelites, against whom the scrupulous exiles entertained strong religious and national objections—the rebuilding of the 'Temple of the Lord' was at last commenced in the first year of Darius, and in the sixth year of his reign it was completed (see HAGGAI: ZACHARIAH). The waste cities were likewise rebuilt and repeopled. During the long reign of Darius, the J. were blessed with a high degree of material prosperity. Under his successor, Xerxes, probably occurred the incidents recorded in the Book of Esther. In the seventh year of Artaxerxes, the successor of Xerxes, Ezra the priest, invested with high powers, and accompanied with a great retinue of his professional brethren, headed a second migration. 13 years later, during the reign of the same monarch, Nehemiah, his cup-bearer, but a man of Jewish family, was ordered to proceed to Jerusalem, and, aided by Ezra and others, succeeded in secretly fortifying the city, notwithstanding the continuous opposition from Samaritans, Ammonites, and Arabians. The strictest observance of the 'written law', even of those of its parts which had been for some reason or other disregarded, was now rigorously enforced, and many 'oral ordinances' were put into practice, which do not seem to have been much heard of previously. The supreme spiritual authority was vested in a society of pious and pre-eminently learned men.

founded by Ezra, out of which grew the 'Great Synagogue,' whose existence modern scholars no longer see any reason to doubt. The compilation and transcription of the sacred records began, periodical public readings and expoundings of the law were instituted, and the vast Targumic, as well as the so-called rabbinical literature, generally dates—in its earlist beginnings—from this point. During the life of Nehemiah, the breach between the J. and Samaritans became final, by the erection on Mount Gerizim (near Samaria) of a rival temple to that at Jerusalem, and the creation of a rival priesthood. For more than a hundred years, the J. lived quietly under the Persian yoke, too insignificant to excite any attention from the Greeks then in the full meridian of their political and literary greatness; and scanty are the accounts which, as yet, have been brought to light out of the mazes of ancient Jewish literature with respect to the inner intellectual life of the J. during that period. That, though silent, it must have been extremely active and rich, is amply evidenced by the sudden appearance, immediately afterward, of a vast number of literary productions.

Alexander the Great, on his way to conquer the whole East, did not deem it necessary to storm Jerusalem. The inhabitants submitted, and he even deigned to have sacrifices offered on his behalf to the national god of his new subjects, a great number of whom, and of Samaritans, he carried away to Egypt (where J. were supposed to have immigrated as early as the time of the last kings of Judah, and later under Artaxerxes Ochus), and peopled a third of his newly-founded city Alexandria with his Jewish captives. After him, Ptolemy the son of Lagos, surnamed *Soter*, one of Alexander's generals, who had become king of Egypt, invaded Syria, took Jerusalem (B.C. 301), and carried off 100,000 of its inhabitants, whom he forced to settle chiefly in Alexandria and Cyrene. The Egyptian (Alexandrian) 'Dispersion' (Golah)—destined to be of vastest importance in the development of both Judaism and Christianity—gradually spread over the whole country, from the Libyan desert in the n. to the boundaries of Ethiopia in the s., over the Cyrenaica and part of Libya, and along the African coasts of the Mediterranean. They enjoyed equal rights with their fellow-subjects, both Egyptian and Greek, and were admitted to the highest dignities and offices; so that many further immigrants followed of their own free-will. The free development which was allowed them, enabled them to reach, under Greek auspices, the highest eminence in science and art, In Greek strategy and Greek statesmanship, Greek learning and Greek refinement, they were ready and brilliant disciples; even their artisans and workmen were sent for by distant countries. From the number of Judæo-Greek fragments, historical, didactic, epic, etc. (by Demetrios, Malchos, Eupolemos, Artapan, Aristæos, Jason, Ezechielos, Philo, Theodot, etc.) which have survived, we may easily conclude what an immense literature must have sprung up here within a few centuries in the midst of the

Judæo-Egyptian community. To this is owing, likewise, the Greek translation of the Bible, known as the Septuagint (q.v.), which in its turn, while it estranged the people more and more from the language of their fathers, the Hebrew, gave rise to a vast pseudo-epigraphical and apocryphal literature (Orphica, Sybillines; Pseudophoclea; poems by Linus, Homer, Hesiod; additions to Esther, Ezra, the Maccabees, Book of Wisdom, Baruch, Jeremiah, Susannah, etc.), beside the peculiar Græco-Jewish philosophy, which sprang from a mixture of Hellenism and Orientalism; for which see GNOSTICS.

For a hundred years, Judæa itself remained under Egyptian rule. During the reigns of the first three Ptolemies, Soter, Philadelphus, and Euergetes, it prospered; but after the accession of Ptolemy Philopator, a change for the worse came over the fortunes of the Jews. Their fate became harder still under his son, Antiochus Epiphanes, or Epimanes (the Madman). With every means that a cruel and foolhardy policy could devise, this king outraged the religious feelings of the nation, and endeavored to tear out every root of the sacred creed. At different periods he sent his generals to Jerusalem to pillage and burn, and to force the Jews into the Greek religion. The temple at Jerusalem was finally dedicated to Jupiter Olympius; idol altars were built in every village, and the people forced to offer swine daily. Some yielded, many fled, the greater part preferred martyrdom in some shape or other.

At this juncture the heroic family of Matathia, priest of the house of the Asmoneans, rose, together with a few patriots, against the immense power of the Syrians. The national cause quickly gathered strength, and after the death of Matathia (B.C. 166), Judas Maccabæus (q.v.) led the national hosts to victory against the Syrians. After his death (B.C. 161) his brothers Jonathan and Simon completed the work of deliverance, and re-instituted the Sanhedrim (B.C. 145). During their rule, alliances were twice formed with the Romans, and the country once more began to prosper. Under Simon especially, Syrian rule became a mere shadow: his was an almost absolute power, so much so indeed that in 170 of the Seleucidian era (B.C. 142), a new Jewish era was commenced, and public documents bore date, 'In the first year of Simon, high-priest and chief of the Jews.' Simon's son, John Hyrcanus, after a brief vassalage to the Syrians, extended his authority over Samaria, Galilee, and Idumea—his grand triumph, in the eyes of his countrymen, being the destruction of the Samaritan temple on Mount Gerizim (B.C. 129); but in reality his most surprising success was the subjugation of the Idumeans, and their conversion to the Jewish religion. His son, Aristobulus, added Iturea—a district at the base of the Anti-Libanus—to his dominions, but after a short reign, died of remorse for the murder of his mother, Salome Alexandra, to whom the secular dominion had been bequeathed by Hyrcanus, but whom Aristobulus had cast into prison, and caused there to die of

hunger. The son who succeeded him was Alexander Jannæus. Constantly fighting, and generally beaten, this king strangely contrived to enlarge his territories; restless and enterprising, as he was cruel and sanguinary, he gave his opponents no rest, and his opponents were all his neighbors in turn, excepting Cleopatra, Queen of Egypt. Attached to the Sadducees (q.v.) like his father, and probably something of a pagan, he was disliked by the mass of his countrymen, and a civil war of six years duration ensued. After a brief period of peace, he died (B.C. 78), recommending, however, his wife, Alexandra, to throw herself into the arms of the very party who had thwarted him all his life, the Pharisees (q.v.), as the best way of retaining her authority. This she did; and governed, on the whole, prudently for nine years. The Pharisaic party, however, abused the power which fell into their hands, and a reaction took place. Aristobulus, youngest son of the queen, and a prince of great spirit, placed himself at the head of the movement, marched to Jerusalem, took possession of the city, and ejected his elder brother, Hyrcanus II., from the sovereignty. Afterward, however, the latter, at the instigation of Antipater, the Idumean, and father of Herod the Great, fled to Aretas, King of N. Arabia, who was induced, by the promise of a cession of the territory which had been acquired by Alexander Jannæus, to take up arms on his behalf. This led to the interference of the Romans, who were then fighting both in Syria and Armenia. After several vicissitudes, Jerusalem was captured (B.C. 63), by Pompey, who had decided in favor of Hyrcanus; and Judæa was made dependent on the Roman province of Syria, and Hyrcanus was appointed ethnarch and high-priest. Aristobul, however, with his two sons, Alexander and Antigonus, and two daughters, were carried captive to Rome.

B.C. 54, Licinius Crassus plundered the temple, which Pompey had piously spared; his ill-gotten gains are said to have amounted to a value of $10,000,000. He fell shortly afterward in the war against the Parthians, and his companion, Cassius Longius, succeeded in completely routing Aristobul's army.

Meanwhile, the war between Cæsar and Pompey broke out. In Syria, the partisans of the latter were numerous, and contrived to poison Aristobulus and put to death his son Alexander, who were Cæsareans (B.C. 49). After the death of Pompey, however, things changed; and Hyrcanus, or rather Antipater the Idumean (who was both his minister and master), saw the necessity of securing the favor of Cæsar. With Hyrcanus II. ended the line of *Asmonean* princes; they exercised (nominally) supreme authority both in the civil and religious affairs of Palestine, i.e., they were both sovereigns and high priests; but, as we have already indicated, the real religious authority had passed into the hands of the priesthood, especially of the Sanhedrim (q.v.). The *Idumean* dynasty, which succeeded the Asmonean, virtually commenced with Antipater, who prevailed on Cæsar to restrict Hyrcanus

to the high-priesthood, and obtained for himself the office of procurator of Judæa, while his eldest son Phazael was appointed gov. of Jerusalem, and his younger son Herod gov. of Galilee. The Jewish or national party took alarm at this sudden increase of Idumean power; strife ensued; and ultimately Antipater perished by poison; but Herod, by the assistance of the Romans, finally entered Jerusalem in triumph (B.C. 37), caused Antigonus, the last male representative of the Asmonean line, and his most dangerous enemy, to be put to death, and commenced the difficult task of governing a people who were growing more and more unruly every day. For political events during the government of the Herods, see HEROD: AGRIPPA: ANTIPATER.

After Herod's death (B.C. 3, about one year after the birth of Christ), Archelaus, one of his sons, ruled Judæa and Samaria; but his arbitrariness, and still more his constant attacks on religion, made him hateful to the people; and Augustus, listening to their just complaints, deprived him of his power, and banished him to Vienne (A.D. 6). Judæa was now thrown together with Syria, and was ruled by Roman governors.

In A.D. 38, Emperor Caligula issued an edict ordering divine honors to be paid to himself. Everywhere throughout the Roman dominions the J. refused to obey. At Alexandria, a frightful massacre took place, and for a moment it seemed as if the whole population of Judæa, too, were doomed to perish; but Herod Agrippa I. (q.v.), tetrarch of N. Palestine, a friend of Caligula, dissuaded the emperor from his barbarous design. About the same time, the Babylonian J. became involved in a quarrel with the Parthians, and were slaughtered in vast numbers. The accession of Claudius, on the assassination of Caligula, seemed, however, the dawn of a brighter day for them. Herod Agrippa, loyal friend and favorite of the new emperor, obtained anew the dominion over all the parts once ruled by his grandfather Herod, and many privileges were through his influence granted to his Jewish subjects, and even to foreign Jews. They received the rights of Roman citizenship (A.D. 41), and Herod even tried to conciliate their religious prejudices by the strictness with which he observed their law—which may account for his persecution of the Christians; yet the national party remained malcontent, and in almost permanent mutiny. After the death of Herod Agrippa I. (his son being but a youth of 17) the country was again subjected to Roman governors. The confusion soon became indescribable. The whole land was overrun with robbers and assassins, some of whom professed to be animated by religious motives (such as the Sicarii), while others were mere ruffianly freebooters and cut-throats; the antipathy between J. and Samaritans waxed fiercer and fiercer, and the latter waylaid and murdered the orthodox Galileans as they went up to worship at Jerusalem; all sorts of impostors, fanatics, and pretenders to magic made their appearance; the priesthood was riven by dissensions; the hatreds between the populace and

the Roman soldier (mostly of Græco-Syrian origin, and under the commands of cruel procurators, such as Albinius and Gessius Florus) increased; frightful portents (according to Josephus) appeared in the heavens, until A.D. 66, in spite of all precautionary efforts taken by Agrippa, the party of Zealots, i.e., the Sicarii or Assassins, burst into open rebellion, which, after a horrible carnage (Josephus calculates the number killed at 1,356,460), was terminated (70) by the conquest of Jerusalem by Titus, the destruction of the temple, and the massacre and banishment of hundreds of thousands of the unhappy people, who were scattered among their brethren in all parts of the world. The defense of Jerusalem (as narrated by Josephus) is one of the most magnificent and melancholy examples of mingled heroism and insanity that the world affords. Still, considerable numbers were allowed to remain in their native country, and for the next 30 years, though both hated and treated with rigor, they appear on the whole to have flourished. Emperor Nerva was as lenient to them as to the rest of his subjects; but as soon as they had attained some political vitality, their turbulent and fanatical spirit broke out anew, Their last attempts to throw off the Roman yoke, at Cyrene (115), Cyprus (116), Mesopotamia (118), and Palestine, under Bar-Coehba (q.v.), (130), were defeated after enormous and almost incredible butchery. The suppression of Bar-Coehba's insurrection (135) marks the final desolation of Judæa, and the dispersion of its inhabitants. Talmud and Midrash (especially *Midrash Echa*) appear to exhaust even eastern extravagance in describing what followed the capture of Bither—the great stronghold of the Jews. The whole of Judæa was made like a desert, about 985 towns and villages lay in ashes, 50 fortresses were razed to the ground; the name of Jerusalem itself was changed into *Ælia Capitolina*, and a heathen colony settled in the city, from entering which every Jew was strictly debarred. The hardships to which the unfortunate race were subjected, were again alleviated in the reign of Antoninus Pius, whom the Jewish writers represent as secretly attached to their religion (see Jost's *Geschichte der Israeliten*, etc.); and better times seemed in store for the homeless exiles. Alexander Severus also placed Abraham on the same divine level as he did Christ, and obtained from the grateful people the title of 'Father of the Synagogue.' Heliogabalus, among his many senseless whims, patronized various Jewish practices, such as circumcision and abstinence from swine's flesh; and generally speaking, from the close of the 2d c. till the establishment of Christianity under Constantine (330), when their hopes were once more dashed to the ground, the J. of the Roman empire appear to have thriven astonishingly. In this period falls the redaction of the chief code and basis of the 'Oral Law,' the Mishna (q.v.) completed by Jehuda *Hanassi* (the Prince), or *Hakkadosh* (the Saint), president of the great school at Tiberias (220); upon which code were grafted subsequently the two gigantic commentaries or complements, the Palestinian and the Babylonian Gemaras

(q.v.). The Babylonian J. were even more fortunate than their western brethren, though they did not perhaps attain the meridian of their prosperity till the revival of the Persian, on the downfall of the Parthian empire. Their leader was called 'The Prince of the Captivity' (*Resh Gelutha*), and was chosen from among those held to be descended from the House of David. He lived in great splendor, assumed among his own people the style of a monarch (though extremely submissive to the Parthian or Persian ruler), had a bodyguard, counselors, cupbearers, etc.; his subjects were, many of them, at least, extremely wealthy, and pursued all sorts of industrial occupations. They were merchants, bankers, artisans, husbandmen, and shepherds: and in particular had the reputation of being the best weavers of the then famous Babylonian garments. In fact, his government was quite an *imperium in imperio*, and possessed a thoroughly sacerdotal or at least theocratic character. The reputation for learning of the Babylonian schools, Nahardea, Sura, and Pumbeditha, was very great. What was their condition at this time further east, is not known; but it seems certain that they had obtained a footing in China, if not before the time of Christ, at least during the first century. The Jews in China were discovered first by the Jesuit missionaries of the 17th c. They did not appear ever to have heard of Christ, but they possessed the Book of Ezra, and retained, on the whole, a decided nationalism of creed and character. From their language, it was inferred that they had come originally from Persia. At one time, they appear to have been highly honored in China, and to have held the highest civil and military offices.

Reverting to Europe, the ascendency of Christianity—or rather of a nominally Christian ecclesiasticism such as Christ had never authorized—was, as we have already said, baneful to the Jews. Imperial edicts and ecclesiastical decrees vied with each other in the rigor of their intolerance toward this unhappy people. They were prohibited from making converts, from invoking (in Spain at least) the divine blessing on the country, from marrying Christian women or holding Christian slaves; they were burdened with heavy taxes; yet no persecution apparently could destroy the immortal race. About this time, they are found in large numbers in Illyria, Italy, Spain, Minorca, Gaul, and the Roman towns on the Rhine; they are agriculturists, traders, and artisans; they hold land; their services, in fact, cannot be dispensed with; Constantine, during whose reign a fierce revolution, incited by his co-regent, Gallus, broke out among the Arians and Jews (353), terms them, in a public document, 'that most hateful of all people;' yet in spite of this, they fill important civil and military situations, have special courts of justice, and exercise the influence that springs from the possession of wealth, knowledge, and mental capacity. The brief rule of Julian the Apostate even shed a momentary gleam over their destinies, and the transport which they manifested on obtaining his permission to rebuild the temple at Jerusalem, is one of the most sub-

lime spectacles in their history. The death of this emperor, however, frustrated their labors, and the rapid increase of ecclesiastical power was, of course, hurtful to them in a variety of ways, though the emperors now began, in the decline of their authority, to protect them as far as they could. In 418 they were excluded from the military service; and in 429 the patriarchate at Tiberias was abolished. After the fall of the West Roman empire, their fortunes were different in different countries. In Italy, Sicily, and Sardinia, they were for a time almost unmolested; in the Byzantine empire they suffered many oppressions. in the 6th and 7th c. the Franks and Spanish Visigoths inflicted on them frightful persecutions.

The sudden volcanic outburst of Mohammedanism in the Arabian peninsula, was at first disastrous to the J. in that part of the world. For several centuries, a Jewish kingdom had existed in the s.w. of Arabia. It was called Himyaritis or Homeritis, and was in a flourishing condition B.C. 120. About A.D. 230 the Jewish religion even mounted the throne of Yemen. Twice, however (by the Ethiopian kings, Aidog and Ez-Baha), were the Jewish kings driven from it, and the Christian religion was introduced in that part 530. At first, Jewish tribes around Mecca and Medina entertained opinions favorable to Mohammed as an Arabian chief, but when Islam began to threaten their own faith and even existence, they rose in arms against its founder. Mohammed proved the stronger: he subdued the Chaibar tribes 627; and the Arabian J. were finally dispossessed of their territories, and removed to Syria. The spread of Mohammedanism through Asiatic Turkey, Persia, Egypt, Africa, and the south of Spain was, nevertheless, on the whole advantageous to the Jews. Excepting accidental persecutions, such as those in Mauritania (790) and in Egypt (1010), they had, under the caliphs and Arabian princes, comparative peace. In Moorish Spain their numbers greatly increased, and they became famous for learning as well as for trade. They were counselors, secretaries, astrologers, or physicians to the Moorish rulers; and this period may well be considered the golden age of Jewish literature. Poets, orators, philosophers of highest eminence arose, not isolated, but in considerable numbers; and it is a well-established fact that to them chiefly is due—through the Arab medium—the preservation and subsequent spreading of ancient classical literature, especially philosophy, in Europe. There are some medical works belonging to ancient Greece even now extant only in Arabic translations by Jews, the originals being probably lost for ever. Different from their fate under Moslem rule was that which they had to endure in Christendom about this period. Only few and far between were those Christian monarchs who rose above the barbarism of the ecclesiastics. About the beginning of the 11th c., the Byzantine emperor, Basil II., renewed the persecution; from quite different causes, the same thing had already begun in Babylonia, where the caliphate had passed into the hands of rulers hostile to the J.; and before the close of the 11th c., the Prince of the Captivity had perished on the scaffold, the

schools were closed, the best of the community had fled to Spain, and those that remained were reduced to an abject condition, from which they have never risen. In Italy, their position was made tolerable through considerable pecuniary sacrifices. Here and there, at intervals, a spirit of intolerance might break out, but they held for the most part the protection of the popes.

More favorable was their lot during the 8th and 9th c. in France, especially in Paris, Lyon, Languedoc, and Provence. At the court of *Louis le Débonnaire*, they were actually powerful. After 877, however, when the weak Carlovingians had begun to rule, and the church was advancing with imperious strides, a melancholy change ensued—kings, bishops, feudal barons, and even the municipalities, all joined in a carnival of persecution. From the 11th to the 14th c., their history is a successive series of massacres. All manner of wild stories were circulated against them: it was said that they were wont to steal the host, and to contemptuously stick it through and through; to inveigle Christian children into their houses, and murder them; to poison wells, etc. They were also hated for their excessive usury, though there can be no doubt that more blame is attachable to those whose tyranny, by depriving them of the right to possess land, had compressed their activity into the narrower channels of traffic. Occasionally, however, their debtors, high and low, had recourse to what they called Christian religion as a very easy means of getting rid of their obligations. Thus, Philippe Auguste, under whose rule the Jews seem to have held mortgages of enormous value on the estates of church and state dignitaries, simply confiscated the debts due them, forced them to surrender the pledges in their possession, seized their goods, and banished them from France; but the decree appears to have taken effect chiefly in the north; yet in less than 20 years, the same proud but wasteful monarch was glad to let them come back and take up their abode in Paris. Louis IX., a very pious prince, among other religious acts, cancelled a third of the claims which the J. had against his subjects, 'for the benefit of his soul.' An edict was also issued for the seizure and destruction of their sacred books; and we are told that, at Paris, 24 carts filled with copies of the *Talmud*, etc., were consigned to the flames. In the reign of Philippe the Fair, they were again expelled from France (1306) with the usual accompaniments of cruelty; but the state of the royal finances rendered it necessary, in a little more than a dozen years, to recall them; and they were allowed to enforce payment of the debts due them, on condition that two-thirds of the whole should be given up to the king! But a religious epidemic, known as the Rising of the Shepherds, having seized the common people in Languedoc and the central regions of France (1321), signalized itself by horrible massacres of the detested race: so horrible, indeed, that in one place, Verdun, on the Garonne, the *J.*, in the madness of their agony, threw down their children to the *Christian* mob, from the tower in which they were gathered

hoping, but in vain, to appease the demoniacal fury of their assailants. In the following year, the plague broke out, and the wildest crimes were laid to their charge. One shudders to read of what followed; in whole provinces every Jew was burned. *At Chinon, a deep ditch was dug, an enormous pile raised, and* 160 *of both sexes burned together!* Yet Christianity never produced more resolute martyrs; as they sprang into the place of torment, they sang hymns as though they were going to a wedding. Finally, 1395, they were indefinitely banished from central France.

Their first appearance in England dates from the period of the Saxons. They are mentioned in the ecclesiastical constitutions of Egbright, Abp. of York, 740; they are named also in a charter to the monks of Croyland, 833. William the Conqueror and his son, William Rufus, favored them; the latter, on the occasion of a public debate between them and the Christians, even swore with humorous profanity, that if the rabbins beat the bishops, 'by the face of St. Luke,' he would turn a Jew himself. The same reckless monarch carried his contempt for the religious institutions of his kingdom so far, that he actually farmed out the vacant bishoprics to the J.; and at Oxford, even then a seat of learning, they possessed three halls—Lombard Hall, Moses Hall, and Jacob Hall, where Hebrew was taught to Christians as well as to the youths of their own persuasion. As they grew in wealth, they grew in unpopularity. On the day of the coronation of Richard the Lion Heart (1189), some foreign J. being perceived to witness the spectacle, from which their nation had been strictly excluded, a popular commotion against them broke out in London; their houses were pillaged and burned; and though Sir Richard Glanville, chief-justiciary of the realm, acting under the orders of the indignant king, partially succeeded in arresting the havoc, and even in bringing some of the mob to justice (three were hanged), yet the barbarous bigotry of priests and people prevented anything like just or salutary punishment. Similar scenes were witnessed at Norwich, Edmundsbury, Stamford, and York; in the last of these towns, most of the J. preferred voluntary martyrdom (*Kiddush Hashem*) in the synagogue to forced baptism. When Richard returned from Palestine, their prospects brightened a little; though still treated with great rigor, yet their lives and wealth were protected—for a consideration! John *Lackland* at first covered them with honor, but the popular and priestly hatred only became the stronger; and on a sudden, the vacillating and unprincipled king turned against his protégés, after they had accumulated great wealth, and imprisoned, maltreated, and plundered them in all parts of the country. Under Henry III., they were mulcted enormously. Accused of clipping the coin of the realm, they had, as a penalty, to pay into the royal exchequer (1230) a third of their movable property. To this reign belongs the now exploded story of the crucifixion of the Christian boy, *Hugh of Lincoln.* The accession of Edward did not mitigate their misery; some efforts, indeed,

were made to induce them to give up their profession of usury, as also in France and elsewhere during the same period; but the fact is, that they were so heavily taxed by the sovereigns or governments of Christendom, and at the same time debarred from almost every other trade or occupation—partly by special decrees, partly by the vulgar prejudice—that they could not afford to prosecute ordinary avocations. The attempt made by the Dominican friars to convert them, of course failed utterly; and 1253, the J.—no longer able to withstand the constant hardships to which they were subjected in person and property—begged of their own accord to be allowed to leave the country. Richard of Cornwall, however, persuaded them to stay. Ultimately, 1290, they were driven from the shores of England, pursued by the execrations of the infuriated rabble, and leaving in the hands of the king all their property, debts, obligations, and mortgages. They emigrated for the most part to France and Germany. Their number is estimated at about 16,000.

In Germany, they were considered the special property of the sovereign, who bought and sold them, and were designated his *Kammerknechte* ('chamber-servants'). As above said, they made their appearance in that region almost as early as the time of Constantine. About the 8th c., they are found in all the Rhenish towns; in the 10th c., in Saxony and Bohemia; in the 11th, in Swabia, Franconia, and Vienna; and in the 12th, in Bradenburg and Silesia. The same sort of treatment befell them in the empire as elsewhere; they had to pay all manner of iniquitious taxes—body-tax, capitation-tax, trade-taxes, coronation-tax, and to present a multitude of gifts, to mollify the avarice or supply the necessities of emperors, princes, and barons. A raid against the J. was a favorite pastime of a bankrupt noble in those days. The Crusades kindled a spirit not in Germany only, however, but through all Christendom, hostile to the 'enemies of Christ.' Treves, Metz, Cologne, Mainz, Worms, Spires, Strasburg, and other cities, were deluged with the blood of the 'unbelievers.' At such epochs, the passions of the populace and of the lower clergy could not be restrained. The word *Hep* (said to be the initials of *Hierosolyma est perdita*, Jerusalem is taken) throughout all the cities of the empire became the signal for massacre, and if an insensate monk sounded it along the streets, it threw the rabble into paroxysms of murderous rage. The J. were expelled—after being plundered and maltreated—from Vienna (1196), Mecklenburg (1225), Breslau (1226), Bradenburg (1243), Frankfurt (1241), Munich (1285), Nürnberg (1390), Prague (1391), and Ratisbon (1476). The 'Black Death,' in particular, occasioned a great and widespread persecution (1348–50). They were murdered and burned by thousands, and many even sought death amid the conflagrations of their synagogues. The race almost disappeared from Germany; only, however, to return, for their services were indispensable. Only here and there, however, they possessed the rights of citizens, or were allowed to hold unmovable property; in general, they were

permitted to prosecute only commerce and usury, and the law turned on them its harshest aspect. Repeatedly, too, the emperors gratified at once their piety and their greed by cancelling their pecuniary claims. In many places, they were compelled to live in certain parts of the town, known as the *Judenstrasse* (Jews' Streets).

Switzerland, whither they came at a comparatively late period, commenced to persecute them about the middle of the 14th c. In the 15th c., they were expelled from Schaffhausen, Zürich, Geneva, Thurgau, and other places.—Their treatment was more humane in Poland and Lithuania. As early as 1264, they had in these countries certain important privileges. Favored by Casimir III., their numbers were swelled, after 1348, by fugitives from Germany and Switzerland.—Russia and Hungary, like most other countries of Christendom during the middle ages, received, persecuted, and banished them.

In Spain, the condition of the J. was long highly favorable. The horrible persecutions of the Gothic princes in the 6th and 7th c., made it inevitable that the first gleam of a Moorish scimiter on the coast would turn the J. into allies of the invaders. During the whole of the brilliant period of Moorish rule in the Peninsula, they had indeed, what must have seemed to them in comparison with their common fate, a sort of Elysian life. They were almost on terms of equality with their Mohammedan masters, rivalled them in civilization and letters, and probably surpassed them in wealth. The Spanish J. were consequently of much higher type than their brethren in other parts of Europe. They were not reduced to the one degrading occupation of usury, though they followed that too; they were husbandmen, landed proprietors, physicians, financial administrators, etc.; they enjoyed special privileges, and had courts of justice for themselves Nor was this state of things confined to those portions of Spain under the sovereignty of the Moors; the Christian monarchs of the north and middle gradually came to appreciate the value of their services, and we find them for a time protected and encouraged by the rulers of Aragon and Castile. But the extravagance and consequent poverty of the nobles, as well as the increasing power of the priesthood, ultimately brought a disastrous change. The estates of the nobles and (it is believed) those attached to the cathedrals and churches, were in many cases mortgaged to the J.; hence it was not difficult for 'conscience' to raise a persecution, when goaded to its 'duty' by the pressure of want and shame. Gradually, the J. were deprived of the privilege of living where they pleased: their rights were diminished, and their taxes augmented. In Seville, Cordova, Toledo, Valencia, Catalonia, and the island of Majorca, outbursts of priestly and popular violence took place (1391–2); immense numbers were murdered, and wholesale theft was perpetrated by the religious rabble. Escape was possible only through flight to Africa, or by accepting baptism at the point of the sword. The number of these enforced converts to Christianity is reckoned at

200,000. The fate of the J. in Spain during the 15th c., however, beggars description. Persecution, violent conversion, massacre, the tortures of the inquisition—we read of nothing but these! Thousands were burned alive. 'In one year, 280 were burned in Seville alone.' Sometimes the popes, and even the nobles shuddered at the fiendish zeal of the inquisitors, and tried to mitigate it, but in vain. At length the hour of final horror came. In 1492, Ferdinand and Isabella issued an edict for the expulsion, within four months, of all who refused to become Christians, with the strict inhibition to take neither gold nor silver out of the country. The J. offered an enormous sum for its revocation, and for a moment the sovereigns hesitated; but Torquemada, the Dominican inquisitor-general, dared to compare his royal master and mistress to Judas; they shrank from the awful accusation; and the ruin of the most industrious, the most thriving, the most peaceable, and the most learned of their subjects—and consequently of Spain herself—became irremediable. This is perhaps the grandest and most melancholy hour in their modern history. It is considered by themselves as great a calamity as the destruction of Jerusalem. 300,000 (some even give the numbers at 650,000 or 800,000) resolved to abandon the country, which a residence of seven centuries had made almost a second Judæa to them. The incidents that marked their departure are heartrending. Almost every land was shut against them. Some, however, ventured into France; others into Italy, Turkey, and Morocco, in the last of which countries they suffered the most frightful privations. Of the 80,000 who obtained an entrance into Portugal on payment of eight gold pennies a head, but only for eight months, to enable them to obtain means of departure to other countries, many lingered after the expiry of the appointed time, and the poorer were sold as slaves. In 1495, King Emanuel commanded them to quit his territories, but at the same time issued a secret order that all Jewish children under 14 years of age should be torn from their mothers, retained in Portugal, and brought up as Christians. Agony drove the Jewish mothers into madness: they destroyed their children with their own hands, and threw them into wells and rivers, to prevent them from falling into the hands of their persecutors. The miseries of those who embraced Christianity, but who, for the most part, secretly adhered to their old faith (*Onssim*, *Anussim*—'yielding to violence, forced ones'), were hardly less dreadful, and it was far on in the 17th c. before persecution ceased. *Autos da Fé* of suspected converts happened as late as 1655.

The wanderers appear to have met much better treatment in Italy and Turkey than anywhere else. During the 15th and 16th c., they are found—except at intervals, when persecution applied its scourge—in almost every city of Italy; pursuing various kinds of traffic (nearly the whole trade of the Levant, for instance, was in their hands), but engaged chiefly in money-lending, in which they rivalled the great Lombard bankers. Abrabanel, perhaps the most

eminent Jewish scholar and divine of his day, rose to be confidential adviser to the king of Naples. In Turkey, they were held in higher estimation than the conquered Greeks; the latter were termed *Teshir* (slaves), but the Jews, *Monsaphir* (visitors); they were allowed to re-open their schools, to establish synagogues, and to settle in all the commercial towns of the Levant.

The invention of printing, the revival of learning, and the Reformation, are generally asserted to have been beneficial to the J., but this can be regarded as true only in a certain sense. When the J. began to use the presses at their earliest stage for their own literature, sacred and otherwise, Emperor Maximilian was urged—chiefly by converts—to order all Hebrew writings to be committed to the flames; and but for the strenuous exertions of Reuchlin (q.v.), ignorance, treachery, and bigotry might have secured a despicable triumph. Luther, in the earlier part of his career at least, looked with no unfavorable eye on the adoption of violent means for their conversion; and, on the other hand, we find at least one distinguished Rom. Catholic, Pope Sextus V., animated by a far more wise and kindly spirit toward them than any Protestant prince of his time. In 1588, he abolished all the persecuting statutes of his predecessors, allowed them to settle and trade in every city of his dominions, to enjoy the free exercise of their religion, and, in respect to the administration of justice and taxation, placed them on a footing with the rest of his subjects. That the Reformation itself had nothing to do with subsequent ameliorations in the condition of the J., is only too plain from the fact, that in many parts of Germany, Prot. as well as Rom. Cath., their lot became actually harder than before. They were driven out of Bavaria (1553), out of Brandenburg (1573), and similar treatment befell them elsewhere. Numerous popular tumults also were excited against them (as late even as 1730 in the Prot. city of Hamburg); and, in fact, during the whole of the 17th and the first part of the 18th c., the hardships inflicted on them by the German governments became more and more grievous. What really caused the change in their favor was the great uprising of human reasonableness that marked the middle of the 18th c. Among writers who distinguished themselves in Germany by pleading the cause of the J, should be mentioned Lessing (q.v.) Mendelssohn (q.v.), and Dohm.

Holland, as we know, was one of the first countries in modern times to rise out of the barbarism of the middle ages. Its active, energetic, intelligent inhabitants appreciated the business qualifications of the J., and as early as 1603, permitted them to settle and trade, though they did not acquire the rights of citizenship till 1796. In England, the edict of Edward I, remained in force more than 300 years; and the first attempt made by the J. to obtain a legal recognition in that country was during the Protectorate of Cromwell 1655. Cromwell himself, according to his tolerant nature, was favorable to their admission; so were the lawyers, according to their custom of using reason; but the nation

generally, were strongly hostile to their admission; and the jangling of the divines appointed to consider the question, prevented anything from being done till the reign of Charles II., who, being much and frequently in need of their services, permitted them to settle in the island. In 1723 they acquired the right to possess land; 1753 they obtained the right of naturalization. Since 1830 civic corporations, since 1833 the profession of advocates, and since 1845 the office of alderman and of lord-mayor have been opened to them. The crowning triumph was achieved 1858 by the admission of J. into parliament. See JEWS, in the Law of the United Kingdom.

Some of the exiles from Spain and Portugal found their way into France, where they long lingered in a miserable condition. In 1550, they were received into Bayonne and Bordeaux; they were also found in considerable numbers in Avignon, Lorraine, and Alsace. In 1784, the capitation-tax was abolished. In 1790, while the French Revolution was still in its pristine vigor, and animated by a sincere humanitarianism, the J. petitioned the national representatives for equal rights as citizens. Mirabeau was among their advocates, and their cause could not, therefore, be unsuccessful. From this time their technical designation in France has been Israelites. In 1806, Emperor Napoleon summoned a 'Sanhedrim' of J. to meet at Paris, to whom questions were put with a view to test their fitness for being French citizens. Their answers were satisfactory, and they were allowed to reorganize their religious institutions. Since then, no material change has taken place in the laws regarding them; and they are found not only in the highest offices of civil administration—frequently in the ministry (e.g., Crémieux, Goudchaux, Fould)—but they also fill some of the chief places in the army and navy. Their bravery has been the subject of frequent remark, especially since among the vices with which prejudice loved to brand them, in spite of all historical evidence, was also that of cowardice. The final acquittal of Capt. Dreyfus (1906), after unparalleled sufferings, was a remarkable vindication of Judaism as well as of French justice.—In Denmark, since 1814 they have been on an equality as citizens with native Danes.—In Sweden, they did not obtain admission till 1776, and then only into Stockholm and three other towns. Citizenship is still conferred as a favor.—Norway forbade them to touch its soil till 1860.—Admitted into Russia Proper by Peter the Great, they were expelled—to the number of 35,000—by Empress Elizabeth 1743. Readmitted by Empress Catharine II., they were further protected by Emperor Alexander I., who 1805-09 issued decrees, insuring liberty of trade and commerce: Nicholas withdrew these privileges. They are still excluded from Great Russia. In 1881 a violent agitation against the Jews accompanied by outrage and bloodshed, arose in s. and w. Russia and with occasional

interruption has continued ever since, marked by atrocious massacres in various cities, which evoked vain protests from the nations.—In Poland they are more numerous than in any other part of the world. They owed their first humane reception in the 14th c. to the love which King Casimir the Great bore for a Jewish mistress. For many years, the whole trade of the country was in their hands. During the 17th and the greater part of the 18th c., however, they were much persecuted, and sank into great ignorance, and even poverty; but education—in spite of the severity and barbarism of Russian intolerance—has, since the French Revolution, made progress among them.—Frederick the Great, King of Prussia, showed himself harsh toward the J. The era of persecution was ended by the Prussian edict of toleration (1812), by which J. were placed in an almost equal position as citizens with other Prussians. Since then, the tendency, on the whole, had been to enlarge their 'liberties'—until the Revolution of 1848 gained them their full emancipation, though it was slowly carried out.—In the smaller German states, their full rights were grudgingly conceded. The Reichstag of the empire, like the National Assembly 1848, now contains many prominent Jewish members. The year 1880 was marked by a remarkable revival of hostility against the Jews, especially in Prussia, and was encouraged by many persons of standing in society: this hostility still shows much popular force. Its occasion seems to be mostly the superior abilities and success of the Jews in gaining station and wealth; though it claims to be caused by their exorbitant greed. This phase of anti-Semitism was called by the Crown Prince Frederick 'the disgrace of the century,' and has been rebuked by the present Emperor William. It is fomented largely by bigoted politicians and clericals and is gradually losing its vindictiveness.—In Austria, Emperor Joseph II. distinguished himself by passing an act of toleration, 1782, which was extraordinarily liberal in its provisions for the Jews. Not till 1860, however (and even then under certain restrictions), did they acquire the right to possess land. They are still subject to annoyance in Vienna, where instances of apostasy are more common than elsewhere in Europe.—In Hungary and Transylvania, they have long had important privileges, and have been protected by the nobility. In Roumania they still suffer much ill-usage, the treaty of Berlin being powerless to protect them.—Spain began to tolerate them again 1837, but few J. have as yet cared to venture back to a land that fills them with mournful recollections.—Portugal, where they have no civic rights, has only a few German Jews.—Switzerland long treated them harshly, and only of late have steps in the right direction been taken.

In Turkey they are very numerous. Their communities in Constantinople, Adrianople, Saloniki, Smyrna, Aleppo, and Damascus, are considerable; in Palestine,

their ancient home, they are said to be rapidly increasing, but they are still, in spite of the many efforts on the part of their European brothers to ameliorate their condition, very poor. Their numbers in Arabia are not very large, yet they have some independence. Those in Persia have sunk into ignorance through oppression, yet it is touching to find that they are not hopeless. 'Heavy,' they say, 'is our slavery; anxiously we wait for redemption.' They exist in Afghanistan, and carry on a trade between Cabul and China; in India and Cochin China, where they are both agriculturists and artisans; in Surinam, there is a flourishing colony; in Bokhara, where they possess equal rights with the other inhabitants, and are skilled in the manufacture of silks and metals; in Tartary and China, where, however, they are insignificant in numbers and in position. They are found also all along the n. African coast; where they have had communities for perhaps more than a thousand years, largely reinforced in consequence of the great Spanish persecutions. They are numerous in Fez and Morocco, though not always free from the perils of Mohammedan fanaticism. In Egypt and Nubia, they are few; in Abyssinia, more numerous: and they have even made their way into the heart of Africa; they exist in Sudan, and are found further south. They have been in Brazil since 1625, and are settlers in parts of the W. Indies. See Elkan Adler, *Jews in Many Lands* (Phila. 1904).

The first settlement of J. as a distinct people in the United States was made at Newport, R. I., about 1676. 1677, Feb. 28, a deed was recorded there, describing the purchase by them of a tract of land for a separate burial-place. They erected a synagogue there 1762. In 1729 a Jewish settlement was made at New York; 1733 at Savannah; 1765 at Charleston; 1782 at Philadelphia; 1823 at Baltimore; and shortly afterward at New Orleans. No systematic attempt was made by them to ascertain their own strength in the United States till 1878, and the returns published 1880 showed manifest incompleteness, viz.: less than 300 congregations, less than 15,000 congregation members, less than 13,000 children attending schools, and total pop. 270,500. During the next 5 years there was an unusual increase by emigration from Germany, Austria, Russia, and other countries, stimulated by race troubles or proscriptive laws; and a competent authority gave the following estimate 1886, Jan. 1: congregations 7,500; congregation members 250,000; children at religious and day schools 215,000; total pop. 500,000. Each congregation makes its own rules for its own government, and elects its own rabbi either for a term of years or for life. The rabbi attends exclusively to the religious needs of the congregation, and a board of trustees to the purely business matters. In 1875 a number of congregations joined in establishing the Hebrew Union College in Cincinnati for the education of rabbis

and teachers, the first Jewish theol. institution in the United States. This college confers the degrees *Bachelor of Hebrew* and *Rabbi*, and is representative of the liberal branch of J. in the United States. The more conservative branch established a similar institution in New York 1887, Jan. 2, under the name The Jewish Theological Seminary. Both institutions provide an 8-year course of study, and require that all students must have a secular collegiate education prior to graduation. The most radical of all recent innovations in orthodox Judaism was the 'platform' adopted at a national Rabbinical convention of 'the Reformed Hebrew Church' in Pittsburg, 1885, Nov. 17-18. Three of the declarations indicate the great divergence of belief. 'We hold that all such Mosaic and Rabbinical laws as regulate diet, priestly purity, and dress, originated in ages and under the influence of ideas altogether foreign to our present mental and spiritual state. They fail to impress the modern Jew with a spirit of priestly holiness; their observance in our days is apt rather to obstruct than to further modern spiritual elevation. We consider ourselves no longer a nation, but a religious community, and therefore expect neither a return to Palestine nor a sacrificial worship under the sons of Aaron, nor the restoration of any of the laws concerning the Jewish state. We recognize in the Mosaic legislation a system of training the Jewish people for its mission during its natural life in Palestine, and to-day we accept as binding only the moral laws, and maintain only such ceremonies as elevate and sanctify our lives, but reject all such as are not adapted to the views and habits of modern civilization.' The J. in the United States are noted for their thrift, interest in public affairs, and benevolence; they have established beautiful, costly, and effective institution of education and mercy. Their numbers to-day (1906) are estimated at about 1,500,000.

The entire number of J. in the world was estimated (1888) by F. D. Mocatta between 8 and 10 millions. There were 100,000 in the United Kingdom, of whom seven-tenths were in London; 20,000 in the British colonies; 70,000 in France, of whom 40,000 were in Paris; 600,000 in Germany, which received 40,000 with Alsace and Lorraine from France; 650,000 in America, of whom nearly 500,000 were in the United States; 40,000 to 50,000 in Persia; 10,000 to 15,000 in the Khanates, and a like number in India; besides large numbers along the n. coasts of Africa, in Abyssinia, Mexico, almost every state in S. America, Switzerland, Belgium, Holland, Poland, Austria, Russia, and Turkey. The influx of J. into Palestine from other parts of the Turkish dominions, also from Poland, Russia, and Central Europe, which had been in progress from the early part of the present c., has been largely checked in recent years by the Turkish govt., which seems to fear the inroad of European ideas. This fecund and indestructible race

of Abraham, Isaac, and Jacob, seems to have entered, ages since, as a pervading element into the mass of the whole humanity.

LANGUAGE AND LITERATURE.—*Language.* Among the Semitic family of languages, the Hebrew (called in the Old Testament, the speech of Canaan; in the later portions of the same book, the speech of Judæa; and first in the Chaldee targums, the Sacred Language, or rather the language of the Sanctuary and things connected with it—as the law [Mishna], the prayers, etc.) is one of the oldest, and in regard to strength, refinement, and elaborate completeness of grammatical structure, one of the most remarkable. For its chief characteristics, see SEMITIC LANGUAGES. Yet it is neither the oldest of Semitic dialects, nor, as was long believed, the first of all human languages. Once identical with the Phœnician, it was adopted by Abraham and his family in Palestine. The peculiar religious and moral notions of the Hebrews could not but impress upon it by degrees a distinct character, and thus Hebrew became a distinct dialect. Although the Sacred writings are the oldest Semitic works which we possess, there is yet, except a few archaisms, hardly any trace of the primitive state of the Hebrew language preserved in them; they belong to periods when it was nearly as fully formed and developed as in the time of the exile. The differences in style, manner, and idiom in the different books, must rather be traced to the individualities of the various writers. In general, we distinguish two distinct periods—the golden age, up to the Babylonian exile, when, except a few Egyptian words, no foreign admixture mars the purity of the language; the second from the exile onward when Persian and Aramaic elements had largely been introduced. As we find it in the Bible, the Hebrew may in some particulars be called a poor language; yet there is a sublime grandeur, and, in the provinces of religion and agriculture, also a richness inherent in it which surpasses almost every ancient and modern language. It is hardly to be presumed, in the absence of distinct traces, that there should have been, within the small compass of Palestine, room for several dialects. The different pronunciation of the *Shin* alluded to in Judges xii. must have been only a solitary peculiarity of the Ephraimites, as, at a later period, the Galileans, and also the inhabitants of Jerusalem, were known for their faulty pronunciation, as shown in several passages of the New Testament and the Talmud. The Hebrew character still universally employed in writing, and called *square*, Assyrian or Babylonian character, first takes the place, at an uncertain period after the exile, of the older national alphabetic character, which was common in the age of Moses, and in any case was similar to the Old Phœnician.

A grammatical treatment of Hebrew began after the language ceased to be spoken by the people. The vocalization and accentuation of the text originated in the 6th and 7th c. after Christ (see MASORA). The J. made a first attempt at a system of grammar about the dawn of the 10th c., after the example of the Arabians, and originally even in

the Arabian language. Rabbi Saadia Gaon (died 942), Jehuda Chajug (abt. 1050), Abraham-ben-Esra (abt. 1150), and David Kimchi (abt. 1190–1200) are held in classic repute as grammarians. The Hebrew dictionary of the latter was long considered the best that had been executed. The founder of the study of Hebrew among Christians was the famous Johann Reuchlin (died 1522), who, however, like the grammarians of the next age, Buxtorf and others, strictly adhered to the Jewish tradition and method. A new era began when the study of the other members of the Semitic family of languages, the Syriac, the Arabic, and the Ethiopic, enlarged the Hebraist's field of view; the heralds of this era were the German scholars, Alb. Schultens (died 1750) and Nik. W. Schröder (died 1798), who sought to remedy the one-sided defective method into which the so-called Dutch school fell by its too exclusive regard for Arabic. Gesenius, especially, with a comprehensive and due consideration of all the allied languages, devoted his attention to the critical observation and exposition of the individual grammatical facts, and a more just and harmonious explanation of them. Since then Ewald (q.v.), who treats the Hebrew language as an organism after the historico-genetic method, has carried the study still further, and in some measure superseded Gesenius. Ewald's *Grammatik der Hebr. Sprache* (Leip. 1844); Gesenius, *Hebräische Grammatik* (1813; 21st ed. by Rödiger (1872); Olshausen's *Lehrbuch* (1861); and the elementary ones founded on its method by Bickell (1879), and Land (Amsterdam 1869); are the best known grammars. The most comprehensive Hebrew dictionary is that by Gesenius, *Thesaurus Linguæ Hebraicæ* (1829; completed by Rödiger 1858); the best of the smaller lexicons are Gesenius's *Hebr. und Chald. Handwörterbuch* (1812; 8th ed. 1878), and Latin *Manuale;* and First's (1863; 3d ed. 1876).

*Literature.*—The extraordinary influence which the religion of the Hebrews has exercised on Christian and Mohammedan nations and is now exercising through them over all the world, has given a universal significance to their ancient literature. In antiquity and credibility, in the religiousness of its form and the vigor of its poetry, it surpasses the literature of any other pre-Christian people, and thus constitutes both the most remarkable monument and the most authentic source of the early history and spiritual development of the human race. It is true, however, that only a comparatively scanty portion of it has come down to the present day, and even the contents of what *is* extant have by no means remained unaltered in the lapse of ages. It is quite certain that the Hebrews, in their very earliest times, only engraved or cut out on stone, metal, or wood what is said to have been executed in *writing;* and some have even conjectured—with little reason—that there was no material adapted for the record of lengthened compositions before the period of David. There is also the conjecture—appealing for its basis to a keen and learned but perhaps too enthusiastic linguistic and historic criticism—that some writings of the Hebrews, held to be of ancient date, are of later

origin than is assigned to them by their contents, their mode of representation, and the character of the language; so that we have nothing which, *in its original shape*, reaches further back than the time of King David. The criticism that confidently proclaims its discovery of traces of much later hands than those to whom tradition ascribes the authorship of some particular works, does not consider itself as necessarily discrediting the incidents narrated, nor as destroying the value of that peculiar spirit by which they are characterized. The question, however, arises as to how far the peculiar spirit and value of an antique depend on the veritableness of its antiquity.

The composition of those extant works in *Hebrew Literature* which, among Protestants are known commonly as 'canonical,' has by the vast majority of scholars, been believed to extend over more than 1,000 years—viz., from the time of Moses to within a century of the time of Alexander the Great. Some of these canonical books date from the time of the exile, and later; and an attempt has been made —certainly ingenious—to make the exile the period of transition from *Hebrew* literature to what the theory designates as *Jewish* literature. Probably all that can be proved from the data now accessible to critics, is that with the exile there came a broadening of the national literary scope; and after it a great increase in the number of writings, with a new diversity in the objects and the nature of the works produced. The nature and contents of the particular writings are determined by the changing fortunes of the people, who were at first strong and flourishing; then disrupted and weakened; then held in subjection by Assyrian, Egyptian, Babylonian, Persian, Greek, and Syrian rulers; and finally, once more independent under native princes. Nevertheless, the prevalent idea—the basis, so to speak, of the whole Hebrew literature, so far as it appears in the 'canonical' books above referred to, is the calling of the nation to be in covenant with God as His chosen people, that through them He might bring in everlasting righteousness and work out salvation for the race of man. Looked at from the merely human point, it is a passionate enthusiasm for independence, and for the preservation of a nationality founded on their divinely given law and their divinely ordered history; hence its patriotism is of a profoundly religious type. The law and the doctrine are the 'word of God;' the Hebrews are the 'people of God,' his 'chosen people;' their fortunes are, in quite a special sense, 'providences;' and their poetry has God or the nation for its constant theme. In a certain sense, therefore, as we might expect, all the productions of the ancient Hebrew muse show marked similarity to each other; still they can be arranged, according to form and contents, under the five heads—law, prophecy, history, lyric poetry, and speculation. (For a special account of these, see the respective titles of the books of the Old Testament: also BIBLE: PENTATEUCH: ETC. The post-exilian literature, founded on the earlier and more creative Hebrew, and for the most part written in the same language, yet gives signs of being qualified, at first in minor points,

by religious conceptions borrowed from the Persians, by Greek wisdom, Roman law, and, at a later period, by Arabic poetry and philosophy, and European science; though everything, at least in the earlier period, is strictly subordinated to the great ideas of the ancient faith. Since the return from exile, the Hebrew or Jewish—erroneously, called also the *Rabbinical*—literature has, without the slightest external encouragement, actively taken part in the cultivation of the human mind; and in the results of this activity, which are still far from being duly appreciated, there lie concealed the richest treasures of centuries.—Hebrew and Jewish literature since the return from exile, B.C. 536, has been divided chronologically into nine periods.

The *first* period extends from B.C. 536 to 143. After the return from exile, the Jewish people naturally enough became animated by intense national feeling: they had nearly lost name, country, life; and now that these were restored again, they strenuously resolved never more to place them in jeopardy. Guided by Ezra, the intellect of the nation began to exhibit surpassing reverence for the Pentateuch and the Prophets. Expositions and additions to the earlier history (*Midrashim*), as well as Greek translations, were executed, and several of the Hagiographa—such as particular psalms, Ecclesiastes, the Books of Chronicles, portions of Ezra and Nehemiah—were written. To this period also, if to any, must belong the uncertain performances of the *Great Synagogue* (q.v.), a body the existence of which has, as indicated above, been doubted by some early critics, but which is now established beyond doubt. To this the work of completing the canon of the Old Testament is chiefly ascribed. Toward the close of this period (B.C. 190–170), several writers appear *in propriâ personâ*, as, for instance, Sirach and Aristobulus. The doctors of whom the Great Synagogue chiefly consisted were called *Soferim* (Scribes), and the Aramaic finally became the popular dialect of Palestine.

The *second* period extends from B.C. 143 to A.D. 135. The *Midrash* (q.v.), or the inquiry into the meaning of the sacred writings, was divided into *Halacha* (q.v.) and *Haggada;* the former considered the improvement of the law, with a view to practical results; the latter, the essence of the religious and historical interpretations. At first, both were the oral deliverences of the Soferim, but gradually written memorials made their appearance. The public interpretation of the Scripture in schools and synagogues, the independence of the sanhedrim, the strife of sects, and the influences of Alexandrian culture, furthered this development. To this period also belong various Greek, but not, as is still erroneously supposed by some, the *written* Targums or Aramaic Versions of the Bible (see TARGUMS), which sprang at a much later period from oral translations of the Pentateuch in the synagogues instituted after the return from the exile; further the whole of the Apocrypha (q.v.), and the earliest Christian writings, which are at least the productions of men nurtured in the principles of Judaism, and which contain many traces of Judaistic cul-

ture, feeling, and faith. It was characterized also by the drawing up of prayers, scriptural expositions, songs, and collections of proverbs. The poet (not the prophet) Ezekiel, the author of the first book of the Maccabees, Jason, Josephus, Philo, Johannes (see above), are names specially worthy of mention; so also are the doctors of the oral law —Hillel (q.v.), Shamai, Jochanan-ben-Saccai, Gamaliel, Eleazar-ben-Hyrcan, Joshua-ben-Chananja, Ishmael, Akiba, and others of like eminence. *Rabbi* (Master), *Talmid Chacham* (Disciple of Wisdom), were titles of honor given to those expert in a knowledge of the law. Besides the Maccabean coins, Greek and Latin inscriptions belonging to this period are extant.

The *third* period reaches from A.D. 135 to 475. Instruction in the Halacha and Hagada now became the principal employment of the flourishing schools in Galilee, Syria, Rome, and since 219 in Babylonia; the most distinguished men were the masters of the *Mishna* (q.v.) and the *Talmud* (q.v.)—viz., Eleazar-ben-Jacob, Jehuda, Jose, Meir, Simeon-ben-Jochai, Jehuda the Holy, Nathan, Chija, Rab, Samuel, Jochanan, Hunna, Rabba, Rava, Papa, Ashe, and Abina. Besides expositions, additions to Sirach, ethical treatises, stories, fables, and history also were composed; the prayers were enriched, the Targum to the Pentateuch and the Prophets completed, and the calendar fixed by Hillel the second, 340. After the suppression of the academies in Palestine, those of Persia—viz., at Sura, Pumbeditha, and Nehardea—became the centre of Jewish literary activity. On Sabbaths and festal days, the people heard, in the schools and places of prayer, instructive and edifying discourses. Of the biblical literature of the Greek J., we have only fragments, such as those of the versions of Aquila and Symmachus. With this period terminates the age of direct tradition.

The *fourth* period extends from A.D. 475 to 740. By this time the J. had long abandoned the use of Hebrew, and instead had adopted the language of whatever country they happened to dwell in. During the 6th c. the Babylonian Talmud was concluded, the Palestinian Talmud having been redacted about a hundred years before. Little remains of the labors of the Jewish physicians of the 7th c., or of the first *Geonim* or presidents of the Babylonian schools, who first appear 589. On the other hand, from the 6th to the 8th c. the Masora was developed in Palestine (at Tiberias); and, besides a collection of the earlier Haggadas (e.g., *Bereshith rabba*), independent commentaries likewise were executed, as the *Pesikta* the *Pirke of Eliezer* (700), etc. See MIDRASH: HAGGADA.

In the *fifth* period, A.D. 740–1040, the Arabs, energetic, brilliant, and victorious in literature as in war, had appropriated to themselves the learning of Hindus, Persians, and Greeks, and thus excited the emulation of the oriental J., among whom now sprang up physicians, astronomers, grammarians, commentators, and chroniclers. Religious and historical Haggadas, books of morality, and expositions of the Talmud, likewise were composed. The oldest

Talmudic compends belong to the age of Anan (abt. 750), the earliest writer of the Karaite Jews. The oldest prayer-book was drawn up about 880; and the first Talmudic Dictionary about 900. The most illustrious *Geonim* of a later time were Saadia (died 941), equally famous as commentator and translator of Scripture into Arabic, doctor of law, grammarian, theologian, and poet; Scherira (died 998), and his son Hai (died 1038), author, among other works, of a Dictionary. From Palestine came the completion of the Masora and of the vowel-system; numerous *Midrashim*, the Hagiographical Targums, and the first writings on theological cosmogony, also were executed there. From the 9th to the 11th c., Kairwan and Fez, in Africa, produced several celebrated Jewish doctors and authors. Learned rabbins likewise are found in Italy after the 8th c.—e.g., Julius in Pavia, etc. Bari and Otranto were at this time the great seats of Jewish learning in Italy. After the suppression of the Babylonian academies (1040), Spain became the central seat of Jewish literature. To this period belong the oldest Hebrew codices, which go back to the 9th c. Hebrew rhyme is a product of the 8th, and modern Hebrew prosody of the 10th century.

The *sixth* period A.D. 1040–1204, is the splendid era of Jewish mediæval literature. The Spanish J. busied themselves about theology, exegetics, grammar, poetry, the science of law, astronomy, mathematics, philosophy, rhetoric, and medicine. They wrote sermons, and ethical and historical works. The languages employed were Arabic, Rabbinical Hebrew, and ancient or classical Hebrew. We can mention here only the great doctor, Samuel Halevi (died 1055), etc.; and lastly, the renowned *Maimonides* (q.v.), whose death closes this epoch. The literature of the French rabbins was more national in its character, and kept more strictly within the limits of the Halacha and Haggada. In Provence, which combined the literary characteristics of France and Spain, there were celebrated Jewish academies at Lunel, Narbonne, and Nîmes, and we find Talmudists, such as Berahja Halevi, Abraham-ben-David, etc. The fame of the Talmudists of Germany, especially those of Mayence and Ratisbon, was very great. Among the most illustrious Jewish writers of this period, belonging to that country, are Simeon, the compiler of *Yalkut*, Joseph Kara, Petachja, etc. Only a few names belong to Greece and Asia; still the Karaite J. had a very able writer in Juda Hadassi (1148). The greatest part of the Feast Day prayers was completed before Maimonides. Many of the works, however, produced between 740 and the close of this period are lost.

The *seventh* period, A.D. 1204–1492, bears manifest traces of the influence exercised by Maimonides. Literary activity showed itself partly in the sphere of theologico-exegetic philosophy, partly in the elaboration of the national law. With the growth of a religious mysticism, there also sprang up a war of opinions between Talmudists, Philosophers, and Cabalists. The most celebrated J. of this period lived in Spain; later, in Portugal, Provence, and Italy. To

Spain belongs (13th c.) the poet Jehuda Charisi, etc. In the 15th c., a decline is noticeable. Books written in Hebrew were first printed in Spain, at Ixar in Aragon (1485), at Zamora (1487), and at Lisbon (1489).—During this epoch, the chief ornaments of Jewish literature in Provence were Moses-ben-Abraham, David Kimchi, Jeruham, Farissol, Isaac Nathan, the author of the Hebrew Concordance.—In Italy, Jewish scholars employed themselves with the translation of Arabic and Latin works. Works of an æsthetical character were written by Immanuel-ben-Solomon, author of the first Hebrew sonnets; Moses de Rieti, who wrote a Hebrew *Divina Commedia*, etc.—While France could show only a few notable authors, such as the collectors of the Tosafot, Moses de Couey, and Jehiel-ben-Joseph, the poet and exegete Berachja, Germany produced a multitude of writers on the law, such as Eleazar Halevi, Meyer from Rothenburg, Asher, Isserlin, Lippmann. The most of the extant Hebrew MSS. belong to this period; but a great part of mediæval Jewish literature lies unprinted in Rome, Florence, Parma, Turin, Paris, Oxford, Leyden, Vienna, and Munich.

The *eighth* period, A.D. 1492-1755, is not marked by much creative or spiritual force. In Italy and the East (1492), in Germany and Poland (1550), in Holland (1620), Jewish scholars worked printing-presses, while numerous authors wrote in Hebrew, Latin, Spanish, Portuguese, Italian, and Judæo-German. Some of the most eminent theologians, philosophers, jurists, historians, mathematicians, poets, commentators, lexicographers, grammarians, etc., were Isaac Abravanel, Elia Misrachi, I. Arama, J. Chabib, Elia Levita, Obadio Seforno, Joseph Cohen, Gedalja Jahia, Sal. Usque, Asaria de Rossi, David de Pomi, David Gans, Isaac Troki, I. Luria, J. Karo, M. Alshech, M. Jafe, J. Heller, J. Aboab, Manasse b. Israel, Dav. Conforte, Leo de Modena, B. Musaphia, J. Eybeschütz, D. Oppenheimer, J. Emden, M. C. Luzzatto, etc.

The *ninth* period extends from A.D. 1755 to to-day. Encouraged by the spirit of the 18th c., Moses Mendelssohn (q.v.) opened a new era, which, as in the middle ages, manifested itself first in the national literature. Its character, contents, expression, and even its phraseology, were changed. Poetry, language, philology, criticism, education, history, and literature have been cultivated. The sacred books have been translated by them into the languages of modern Europe, and foreign works into Hebrew; and many J. have taken an important part in the public and scientific life of Europe. Among the illustrious names are Ezechiel Landau, Elia Wilna, J. Berlin, Mendelssohn, Maimon, Bendavid, Mendez, Beer, Euchel, Bensev, S. Dubno, Creizenach, Zunz, Jost, Geiger, Rappaport, Dukes, Zedner, Fürst, Z. Frankel, L. Löw, Sachs, Steinschneider, Graetz, Munk, Salvador, Reggio, etc.—chiefly cultivators of literature, with refer-

ence to their own creed and nationality. Of more recent date are names like S. Schechter, W. Bacher, D. Kaufmann, U. L. Bloch, Güdemann, M. Joel, D. Rosin, Barth, Marcus Jastrow, Alex. Kohut, A. Neubauer, J. H. Weiss, A. Berliner, and M. Mielziner.

To enumerate names of those who were and are illustrious in general literature, in law, philosophy, medicine, philology, mathematics, belles-lettres, etc., we cannot even attempt, since there is not one country in Europe which does not count J. among the foremost and most brilliant representatives of its intellectual progress. Of Germany—considered to be in the vanguard of European learning—Bunsen says that the greater part of the professors at its universities and academies are Jews or of Jewish origin (Neander, Gans, Benary, Weil, Benfey, Stahl, Dernberg, Valentin, Lazarus, Herz, etc.)—certainly a startling fact. Another extraordinary and well-authenticated fact is, that the European press, no less than European finance, which means the freest development of all the resources of soil and science for the gigantic enterprises of our day, are to a great extent in Jewish hands or under their power; while names like Heinrich Heine, B. Börne, R. v. Ense, Berthold Auerbach, Henrik Herz, Jules Janin; Felix Mendelssohn-Bartholdy, Halévy, Meyerbeer, Moscheles, Joachim, Ernst, Rubenstein. Wieniawski, Grisi, Braham, Costa; Rachel, Davison, Bizet, Saint Saens, Bendemann, L. Kompert, K. E. Franzos, A. Bernstein, I. Zangwill, Claude Montefiore, Sidney Lee, etc.; besides hosts of others less familiar to English ears, who shine in all branches of art, music, sculpture, painting, the drama, etc., show plainly how unjust is the reproach of their being an 'abstract' people, without sense for the bright side of life and the arts that embellish it. Briefly—they are, by the unanimous verdict of the historians and philosophers of our times, reckoned among the chief promoters of the development of humanity and civilization. What has been their reward we have seen. Terrible has been the punishment for sins, real and imaginary, over which both Christians and Mohammedans have thought good, at different periods, to constitute themselves judges; and the most hideous spot in the history of the last 2,000 years is the systematical but futile endeavor to sweep the 'chosen race' from the face of the earth.

JEWS, in the Law of the United Kingdom of Great Britain and Ireland: now, if natural-born subjects, on nearly the same footing as British subjects. The following peculiarities only are noticeable. By the 8 and 9 Vict. c. 52, they were allowed to hold offices in municipal corporations, on condition of signing a declaration (in place of the usual oaths) not to exercise their influence to injure or weaken the Protestant Church. They are placed, as regards their schools and places of worship, of education and charities, on the same footing

as Protestant dissenters. Their marriages according to their own usages are valid, provided both the parties married had been persons professing the Jewish religion. As regards municipal offices, and all other offices where the same declaration is required (see ABJURATION, OATH OF), a Jewish subject is entitled to be admitted with a declaration or without any oath. The law now enables either house of parliament, when a Jew would be entitled, but for the oath of allegiance, to sit and vote in the house, to modify that oath by omitting the words, 'and I make this declaration upon the true faith of a Christian.' It is, however, still in the discretion of either house to refuse to make the resolution to omit those words, so that J. have not an absolute right to admission, though practically the admission is not likely to be refused, at least by the house of commons. The law especially excludes J. from holding or exercising the office of guardians and justices of the United Kingdom, or of regent of the United Kingdom, or of lord high chancellor, lord keeper or lord commissioner of the great seal of Great Britain or Ireland, or the office of lord lieutenant or deputy, or other chief governor or governors of Ireland, or her majesty's high commissioner to the general assembly of the Church of Scotland. Whenever a Jew holds any office in the gift of her majesty, to which office belongs any right of presentation to any ecclesiastical benefice, such right of presentation devolves on the Abp. of Canterbury for the time being.

JEW'S EAR (*Exidium auricula Judæ*): fungus, one of the *Hymenomycetes*, which grows on decaying parts of living trees, particularly elders. In size and form it bears some resemblance to a human ear. It is soft but cartilaginous, wrinkled, and generally brown. It is stemless. The spores are produced on the upper surface. The under surface is fibrous and downy. J. E. was formerly in repute as a topical discutient and astringent. It may be kept long in a dried state. The genuine J. E., after being dried, swells when immersed in water; the *Polyporus versicolor* (often substituted for it) does not.

JEWS-HARP [F. *jeu*, a toy?]: very simple musical instrument, of metal. When played on, it is held between the teeth, and the sound is produced by the inhaling and ejecting of the air from the lungs, while at the same time an elastic tongue or spring, which is fixed in the middle of the frame, is set into vibration by being twitched by the finger. It is an old invention, mentioned by Prätorius in *Organographia*, 1619, under the name of Crembalum. The best Jews-harps are made in Riva, a town in the Italian Tyrol. The first performer of any celebrity on the Jews-harp was a Prussian soldier, under Frederick the Great, called Koch. In modern times, Kunert, Amstein, and others, were famous for using a variety of harps, all differently tuned; and their performances were so wonderful, that, like other artists, they travelled over Europe, and appeared at public concerts with great success.

JEWS' MALLOW: see CORCHORUS.

JEWS' THORN. See JUJUBE; PALIURUS.

JEWS, THE LOST TEN TRIBES OF: after the downfall of the kingdom of Israel, the ultimate fate of the people who were led into captivity by Assyria has been the subject of much discussion, wholly conjectural, and many theories have been advanced as to their continued existence. The question of the literal fulfilment of Old Testament prophesies as to the return of Israel seems to be connected with the existence of the Ten Tribes; for if so large a body has totally disappeared, doubt would necessarily be cast in the eyes of many upon the credibility of Scripture. Hence various attempts have been made to identify the Ten Tribes. Without referring to the tradition in the Apocrypha and Talmud—in fact the famous Rabbi Akiba asserted that the Ten Tribes would never return—the chronicler Eldad of the seventh century claimed that they existed in his day in parts of Southern Arabia or possibly Abyssinia. Farissol, a Jewish geographer (b. 1451), sees in the Beni Israel of India their descendants, while alleged traces have been discovered in Persia, Cochin China, and Yemen, among the Nestorians in Mesopotamia and the Jezidis or devil-worshipers of the same religion. The Afghans with their Jewish appearance and traditions are identified by Mohammedan writers and by G. Moore in his *Lost Tribes* (London 1861) with the Ten Tribes and the latter goes so far as to derive the Hindus from the same origin, through the Scythians. The Anglo-Israelites identify the entire English, if not the whole Teutonic race, with the Ten Tribes. As recently as 1879 McLeod in his *Epitome of the Ancient History of Japan* advocated the theory that the Shindai or holy class of Japan were descendants of Ten Tribes; the same origin is claimed by others for the Australians and the Masai of British East Africa. The legend of such descent has been affirmed of the aboriginal inhabitants of Central and South America as well as of the North American Indians, Jewish customs having been traced among them. It is possible that long before the compulsory migration of the Israelites under Assyrian supremacy, many had intermarried with the Jews of the neighboring kingdom, while others had amalgamated with the people of Central Asia, to whom they may have imparted some of their ceremonies and ideas and who by subsequent migration, so frequent in those ages, may have still further spread Jewish customs and opinions. Consult Newbauer, in the London *Jewish Quarterly Review* I.; A. F. Hyamson, *Jewish Quarterly Review* XV.; Mallory, *Israelite and Indian* (New York 1889).

JEYPORE, *jī-pōr'*, or JEYPOOR, or JAIPUR, *jī-pôr'*: state in Rajputana, w. Hindustan; lat. 25° 41′—28° 27′ n., long. 74° 55′—77° 15′ e.: bounded n. by Bikaner, Loharu, Jhajjar, and Patiala, e. by Alwar, Bhartpur, and

Karauli, s. by Gwalior, Bundi, Tonk, and Udaipur, w. by Kishangarh, Jodhpur, and Bikaner; 14,465 sq. m.; cap. city of same name. The soil is generally sandy; the hills are covered with jungle-grass valuable only for fuel; the hill ranges contain granite, sandstone, black marble, mica, cobalt, and copper ore; and an annual average of 40,000 tons of salt is taken from Sambhar Lake. The best soil yields corn, cotton, wheat, barley, sugar-cane, tobacco, opium, linseed, and several purely Indian products; but only with the aid of extensive irrigation works, for which the state has paid $25,000 annually since 1868. Jeypore is under the political superintendance of the Rajputana agency and the govt. of India. The chief manufactures are marble sculpture, enamel work on gold, woolen goods and fabrics. Pop. about 2,800,000.

JEZEBEL, n. *jĕz'ĕ-bĕl* [Heb. *Isebel*]: an impudent, daring, and vicious woman, so named after *Jezebel*, the wife of Ahab, King of Israel; a bold, bad woman; a vixen or termagant.

JEZIRAH, *jĕ-zī'rah*, or Book of Creation: one of two noted cabalistic works of the Jews, divided into six chapters and numerous sections, claimed by the Jews to have been of divine origin, and regarded by modern scholars as having been composed in Egypt in the time of Philo Judæus by learned rabbis. It is based on the cabala, or science of interpreting the letters, words, numbers, and accents in the Hebrew law, each one of which is believed by cabalists to contain a mysterious meaning, and to form a method of foretelling future events. The Jezirah professes to furnish an account of the creation of the world, and was printed with commentaries 1562, Latin translation 1642, and German translation 1830.

JEZREEL, *jĕz'rĕ-ĕl:* town of n. Palestine on a plain of the same name, between Gilboa and Little Hermon, cap. of the Israelite monarchy under Ahab; now the small village of Zerin. The site of Naboth's vineyard is supposed to be identical with some rock-cut wine presses e. of the village; and the fountain (I K. xxi. 1) is the spring of Ain el Meiyitch, a shallow pool full of fish, lying between block basalt bowlders on the n., or the larger spring Ain Jalud in the valley n. of the hill. When Ahab chose Jezreel for his residence he built his palace on the e. side of the city, making it a part of the surrounding wall, the entrance to the city and to the palace being through a single gate. Jezebel maintained near by the temple and grove of Astarte with 400 priests (I K. xxiii. 19).

JHELUM, *jē'lŭm*, or Jhylum, *jī'lŭm* or Jelum, *jē'lŭm*, or Behut, *bē-hŭt'* (ancient *Hydaspes*): one of the rivers of the Punjab. It rises in Cashmere, which forms its upper basin, and is navigable within that country about

70 m. On emerging from the Himalaya through the Baramula Pass, it again becomes navigable for small craft, After a course of 490 m., it joins the Chenab, lat. 31° 10′ n., long. 72° 9′ e., and forms what is sometimes called the Trimah or Trimab. The banks of this river were the scene of the battle between Alexander the Great and Porus. The river waters the towns of Islambad, Shahabad, Srinagur, Jelalpur, and Pind Dadun Khan.

JHULA, n. *jô′lă:* an Indian bridge across a chasm or ravine, constructed of ropes composed of twigs twisted together.

JIB, n. *jĭb* [Dut. *gijpen,* to turn suddenly—said of sails: prov. Dan. *gippa,* to jerk or tip up as by a sudden movement: OF. *regiber,* to kick or wince]: foremost sail of a ship, which shifts of itself from side to side as required by the wind: the projecting beam of a crane: V. to move restively sidewise or backward, as a horse. JIB′BING, imp.: ADJ. moving restively, as a horse. JIBBED, pp. *jĭbd.* JIB′BER, n. a horse which moves restively sidewise or backward. JIBE, or GYBE, or GIBE, v. *jīb,* among *seamen,* to shift a boom-sail from one tack to the other; to veer a vessel; to turn a vessel round with her stern to the wind when she cannot be stayed. JI′BING, imp.: N. in *sailing,* act of going about when the wind is astern or abaft the beam, in order to bring the wind to bear on the reverse side of the vessel to that on which it was previously. JIBED, pp. *jībd.* JIB-BOOM, *-bôm,* extension of the bowsprit of a ship toward the front, running out beyond it, by a cap and irons. It gives greater spread for jib-sails, and a more extended base for the top-gallant-mast-stay. In large vessels, a flying jib-boom is run out in a similar manner beyond the jib-boom. JIB-DOOR, a door which stands flush with the wall without dressings or moldings.

JIB: triangular sail borne in front of the foremast in vessels. It has the bowsprit for a base in schooners and vessels of a smaller class, and the jib-boom in larger vessels, and exerts an important effect, when the wind is a-beam, in throwing the ship's head to leeward. The flying jib has the flying jib-boom for a base. When a fore-course is not used, an additional jib-shaped sail, called the foresail, is spread on the fore-stay.

JIBB, v. *jĭb:* to move restively sidewise or backward, as a horse: also spelled JIB and JIBE.

JIBE, v. *jīb:* expression of scorn; incorrect spelling of GIBE, which see.

JIFFY, n. *jĭf′fĭ* [OE. *jiffle,* to be restless: W. *ysgipio,* to snatch (see JIB)]: an instant; a moment.

JIG, or GIGG, n. *jĭg* (q.v.) [F. *gigue,* a jig, in OF. a stringed instrument; *giguer,* to throw the legs about: It. *giga,* a jig, an air for dancing in triple time: Ger. *geige,* a violin]: a quick, lively, or jolting dance; the music or

air played for it: V. to dance in a lively, easy, jolting way; to dance; to sort or separate by shaking, as ore. JIG'GING, imp.: N. the process of sorting ore by passing it through a wire-bottomed sieve. JIGGED, pp. *jĭgd.* JIGGISH, a. *jĭg'gĭsh,* suitable for a jig; having a light, lively manner and temper.

JIGGER, n. *jĭg'gẽr* [from *jig,* which see]: contrivance for hoisting in a cable on board a ship or for steadying it; consisting of a strong rope with a block at one end, and a sheave at the other, used in maintaining the tension of—or, technically, in 'holding on' to—the cable as it is thrown off from the capstan or windlass, round which it takes only two or three turns. A potter's wheel by which earthenware vessels are shaped by a rapid motion: a miner who cleans ore in a wire sieve: a cooper's tool: troublesome insect of tropical climates, being another name for *chigoe,* of which it is a corruption: see CHIGOE.

JIG-JOG, n. *jĭg'jŏg* [*jig,* and *jog*]: a slow easy pace; a jolting motion.

JIGOT, *jĭg'ŏt.* See GIGOT.

JIHAD, or JEHAD, n. *jē-hăd':* the term applied to the religious war, as undertaken by Mohammedans against those who did not believe in the mission of the Prophet, for the purpose of promoting the spread of Islam. The Jihad was a religious duty, imposed upon the faithful both by the Koran and the concurrence of sacred tradition. Its purpose was ostensibly the Mohammedanization of the unbelieving, and it was carried on in a systematic manner. The disposition of the peoples conquered in the Jihad was prescribed by law. Captives and others who fell into the hands of the Mohammedan hosts had the choice of three things given them. Either they were to deny their own faith and accept that of Islam, or to consent to pay a toll tax to their conquerors. If they refused both of these alternatives they were put to death by the sword. Consult: Baillie, *Of Jihad in Mohammedan Law* (1871); T. P. Hughes, *Dictionary of Islam* (1886).

JIHUN'. See Oxus.

JILL, n. *jĭl:* the old familiar name for a woman; a flighty wanton woman.

JILO'LO. See GILOLO.

JILT, n. *jĭlt* [Scot. *gillet,* or *jillet,* a giddy girl: a dimin. from the familiar personal name *Jill,* as in *Jack* and *Jill, or Gill*—said to be a shortened form of *Julĭāna:* comp. Gael. *diult* = *jôlt,* to refuse, to reject]: a young woman who lightly trifles with her lover; a name of contempt for a young woman: V. to give hopes to a lover and then reject him; to practice deception in love. JILT'ING, imp. JILTED, pp.

JIME'NES DE CISNE'ROS. See XIMENES.

JIMMERS, n. plu. *jĭm'mėrz* [F. *jumeau*, twin—fron L. *gemellus*, twin; *gemellī*, twins]: jointed hinges.

JIMMY, or JEMMY, n. *jĭm'mĭ* [slang]: a short bar used by burglars in breaking open doors.

JIMP, ad. *jĭmp*, or JIMPLY, ad. *jĭmp'lĭ* [O.SW. *skamt*, short]: scarcely; hardly; barely.

JIMP, a., or GIMP, a. *jĭmp* [W. *gwymp*, neat, smart, trim]: elegant of shape; handsome; neat.

JI'NA. See JAINAS.

JINGAL, or JINGALL, n. *jĭn-gawl'* [Hind. *jangal*]: in the *E. Indies*, or *China*, a light gun or cannon which can be carried by two men; a large matchlock.

JINGLE, n. *jĭng'gl* [imitative of the sound]: a rattling or clinking sound; correspondence of words in sound; in speech or writing, high-sounding words without much sense: V. to shake or ring; to send forth a clinking or rattling sound, as small metallic bodies when shaken together. JIN'GLING, imp. JINGLED, pp. *jĭng'gld:* sometimes spelled GINGLE, *jĭng'gl.*

JINGO, n. *jĭng'gō* [etym. doubtful]: a word used as a mild oath; one of the party in Britain which advocated the cause of the Turks in the Turco-Russian war, 1877–8; one who advocates a spirited foreign policy; clamorous: ADJ. relating or pertaining to the Jingoes, as a *jingo* policy. JINGOISM, n. *-ĭzm*, views and procedure of the Jingoes.

JINK, v. *jĭnk* [Goth. *swinka*, to seek to flee secretly: Ger. *schwinken*, to move swiftly]: in *Scot.*, to elude or escape from a person attempting to lay hold on one; to trick; to move nimbly; to dance: N. act of eluding another. JINK'ING, imp. JINKED, pp. *jĭnkt.* HIGH-JINKS, uproarious sport and merriment.

JINN, n. plu. *jĭn:* in the *Arabian myth.*, a race of fairies, the offspring of fire. JINNEE, n. *jĭn'nē*, one of a race of fairies. A king of the Jinn was supposed to have built the pyramids. There were good and beautiful, and evil and hideous Jinn; and the power was attributed to them of becoming invisible, or of appearing under various animal forms.

JIN-RIKI-SHA, *jĭn-rĭk'ĭ-shâ:* light two-wheeled carriage used by the Japanese since the political revolution 1868; resembling somewhat the *volante* of Cuba and Mexico, excepting that instead of being drawn by one horse it is drawn by one man. It is similar also to the French *brouette* of the early part of the 17th c. It is provided with drop-top and a centre-pole to which a cross-bar is attached. The jin-riki-sha man, with little clothing to impede his movements, raises the pole to the height of his breast, presses forward against one end of the cross-bar, and dashes off with jin-riki-sha

and occupant at a rate—if he be trained to the service—of, it is said, sometimes 8 m. an hour. The jin-riki-sha is now seen everywhere in the large cities, and is a popular mode of local sight-seeing travel.

JIONPOOR'. See JOUNPUR.

JIRKINET, n. *jĕrk'ĭ-nĕt* [diminutive of *jerkin*]: a sort of bodice or substitute for stays, without whalebones, worn by women.

JIU JITSU: the Japanese method of personal attack and self-defense, literally means the gentle art of making one's opponent use his strength to his own disadvantage. There are many methods, but only one is recognized as official, that devised by Prof. Jiguro Kano, principal of the High Normal School of Tokyo, and is taught to every officer and enlisted man of the Japanese army, navy and police departments. Included in the one hundred and sixty feats of the Kano system are the 'serious tricks,' by which death may be caused at the will of the adept, and the process of kuatsu or revivification, by which the apparently lifeless victim is restored to the full use of his functional powers. Jiu Jitsu is not a system of muscle building by physical training, but rather a means of offsetting the effectiveness of powerful muscles, by performing the most skilful yet simple maneuvers. The United States Government has recognized its importance as science by having it taught at West Point and Annapolis as a special training. Consult Skinner, *Jiu Jitsu* (New York 1904).

JO, n. *jō*, JOES, n. plu. [F. *joie*, joy]: in *Scot.*, a lover; love; loved one.

JOAB, *jō'ăb*, the son of King David's sister Zeruiah, and commander-in-chief of David's army. He is first mentioned as the leader of David's men in an expedition against Abner. When Joab treacherously murdered Abner in revenge for the death of Asahel, David dared not punish the deed, and thus showed the ascendency which Joab had acquired over him. After David had been established king in Jerusalem, Joab conducted all his wars with uniform success. He remained faithful to him during the rebellion of Absalom. When he had slain that ungrateful son, David made a weak attempt to supersede him in favor of Amasa, the general of Absalom. Joab slew Amasa and resumed his post, a proceeding in which the king tacitly acquiesced. He further supported David by assisting in the murder of Uriah the Hittite. Toward the close of David's reign he joined in the rebellion of Adonijah, for which Solomon, by the advice of David, put him to death.

JOACHIM, *yō'â-ċhĭm*, JOSEPH, MUS. DOC.: Hungarian violinist: b. near Presburg, 1831; d. Berlin, 1907, August 15. He received his early instruction at Pesth under Szervawinsky, director of the orchestra at the

theatre there, and made his début in public at the age of seven. He afterward became the pupil of Böhm at Vienna, and at Leipzig studied counterpoint under Hauptmann, and made the friendship of Mendelssohn. His first appearance in London was 1844, when, though only in his 14th year, he was at once ranked among the most distinguished contemporary violinists. His performances at Vienna, Pesth, Paris, and London later established him as the first violinist of the day. In power and brilliancy of execution, and all the mechanical qualities of playing, he was little if at all behind Paganini. His works, which include overtures, Hebrew melodies and other songs, and compositions for the violin, are pervaded by the same tenderness and depth of musical feeling that characterize his playing. In 1869, Joachim became a member of the senate of the Berlin Acad., and was appointed a director in the Conservatory of Music there. In 1877 Joachim received the degree MUS. DOC. from the Univ. of Oxford.

JOACHIM, *jō'a-kĭm*, THE PROPHET: abbot of Floris: 1145–1202, Mar. 30; b. Celico, Italy. He attended the Sicilian court in youth, made a pilgrimage to Palestine, became a Cistercian monk, was appointed abbot of Corace in Calabria 1178, and established the monastery *Sancti Joannis in Flori* among the lonely hills of Sylæ near Cosenza, the strict rules of which were sanctioned by Celestine III. 1196. The congregation *Ordo Florensis* sprang from this monastery. Joachim protested in prophetic denunciation against existing ecclesiastical abuses, formulated a scheme of the past and future course of the divine kingdom, and prophesied the downfall of the papacy. He left numerous commentaries and a treatise, *The Everlasting Gospel*, which was condemned by Roman councils 1215, 1260. He had many followers who called themselves *Joachimites*, but when the world did not come to an end 1260 according to his prophecy they rapidly dispersed.

JOAN, *jōn*, POPE: a supposed female occupant of the papal chair in the 9th century. The popular story represents this singular personage as of English parentage, but educated at Cologne, Rome, and ultimately Athens, in all which places in the assumed character of a man, and under the name of *Joannes Anglicus*, 'John of England,' she is alleged to have attained great distinction as a scholar. The narrative adds, that having come in the end to Rome, she had ability and adroitness enough to carry the deception so far as to obtain holy orders, and to rise through various gradations to the papal sovereignty itself; but that being nevertheless of immoral life, the fraud was at length discovered, to the infinite scandal of the church, by her becoming pregnant, and being seized with the pains of childbirth on the occasion of a public procession to the Lateran

palace. The story had obtained currency, certainly, in the latter part of the 13th c. It was inserted, though discredited, by Platina in his *Lives of the Popes*, but the statement does not appear to have been much discussed until the 16th c., when the commentator of Platina, Panvinius, inserted a note in refutation of it. Such currency had the story attained that in 1400 a bust of the woman pope was placed with those of the other popes in the cathedral of Siena, inscribed 'John VIII., a woman from England.' Later Rom. Cath. historians have published replies to the objections against the papal succession which their adversaries drew from the story of the female pope; but it is curious that the most complete and elaborate investigation of the question was that of a Calvinist divine, Blondel, who demonstrated the historical groundlessness of the story. He was followed on the same side by Leibnitz; and though attempts have been made from time to time to maintain the tale, it has been almost universally discarded, its latest patron being Prof. Kist of Leyden, who, but a few years since, produced an elaborate essay, *Verhandeling over de Pausin Joanna*, on the subject. A few words will show the state of the historical evidence. The place assigned to the supposed papess is between the historical popes Leo IV. and Benedict III., the latter of whom died 858, Mar. 10. It is alleged that the Joan of the story occupied the papal chair for two years and five months. Now, according to all the chroniclers, with the doubtful exception of Marianus Scotus, Leo IV. did not die till 855, July 10, so that the interval between his death and that of Nicholas I., successor of Benedict III., would be entirely filled up by two years and five months of the papess, and no room would be left for the undoubted pontificate (of two and a half years) of Benedict III. Further, Hincmar of Rheims, a contemporary, in his 26th letter to Nicholas I., states that Benedict III. succeeded Leo IV. immediately. It is proved, moreover, by the unquestionable evidence of a diploma still preserved, and of a contemporary coin which Garampi has published, that Benedict III. was actually reigning before the death of Emperor Lothaire, which occurred toward the close of 855. The earliest authorities for the story of Pope Joan, not reckoning a more than doubtful MS. (not found in the original text—see Döllinger's important work, below) of Marianus Scotus, are Martinus Polonus and Stephen de Bourbon, who wrote about 1225. But Döllinger asserts that the passage in Martinus Polonus is an interpolation between 1278 and 1312. Döllinger traces the origin of the story to the Dominicans who had a grudge against the papacy on account of their treatment by Benedict III.—See Gieseler's *Kirchengeschichte*, th. ii. b. ii. s. 5; Wensing's *Over de Pausin Johanna* (Hague, 1845); Döllinger's *Papstfabeln des Mittelalters* (Munich 1863—also in Eng-

lish trans., pub. in England and the United States); and Bianchi Giovini's *Esame Critico degliatti relativi alla Papessa Giovanna* (Milan, 1845).

JOAN'NES, Island of. See Marajo.

JOANNITE, n. *jō-ăn'nīt*, or Johannite, n. *jō-hăn'nīt*, or Johannists: in *chh. hist.*, one of the followers of John Chrysostom (q.v.). The sect became extinct about 438.

JOAN OF ARC, *jōn of ârk* (Fr. Jeanne d'Arc, F. *zhân-dârk*, properly *Joanneta Darc*), The Maid of Orleans: abt. 1411–1431, May 30; b. in the village of Domremy, dept. of Vosges, France; of respectable parentage. She was taught, like other young women of her station in that age, to sew and to spin, but not to read and write. She was distinguished from other girls by her greater simplicity, modesty, industry, and piety. When about 13 years of age, she believed that she saw a flash of light, and heard an unearthly voice, which enjoined her to be modest, and to be diligent in her religious duties. The impression made upon her excitable mind by the national distresses of the time, soon gave a new character to the revelations which she supposed herself to receive, and when 15 years old, she imagined that unearthly voices called her to go and fight for the Dauphin. Her story was at first rejected, as that of an insane person; but she not only succeeded in making her way to the Dauphin, but in persuading him of her heavenly mission. She assumed male attire and warlike equipments, and with a sword and a white banner, she put herself at the head of the French troops, whom her example and the notion of her heavenly mission inspired with new enthusiasm. 1429, Apr. 20, she threw herself, with supplies of provisions, into Orleans then closely besieged by the English, and May 4–8 made successful sallies upon the English, which compelled them to raise the siege. After this important victory, the national ardor of the French was rekindled to the utmost, and Joan became the dread of the previously triumphant English. She conducted the Dauphin to Rheims, where he was crowned, 1429, July 17, and Joan, with many tears, saluted him as king. She now wished to return home, deeming her mission accomplished; but Charles importuned her to remain with his army, to which she consented. It was a frightful mistake. The soldiers considered her almost a goddess, and her naturally enthusiastic temperament was developed beyond all bounds. Now, however, because she no longer heard any unearthly voice, she began to have fearful forebodings. She continued to accompany the French army, and was present in many conflicts, till, 1430, May 24, she threw herself, with a few troops, into Compiègne, which the Burgundian forces besieged; and being driven back by them in a sally, was taken prisoner, and sold by the

Burgundian officer to the English for a sum of 16,000 francs. Being conveyed to Rouen, the headquarters of the English, she was by them, at the instance of the Univ. of Paris, delivered to the Inquisition for trial as a sorceress and heretic; and after a long trial, accompanied with many shameful circumstances, she was condemned to be burned to death. She recanted her alleged errors at the stake, and expressed penitence, in the hope of having her punishment commuted into perpetual imprisonment; and pardon was granted her. But this did not accord with the views of those in whose power she was. Words which fell from her when subjected to great indignities, and the fact that she was induced by her attendants to resume male attire, were made grounds of concluding that she had relapsed, and she was again brought to the stake, 1431, May 30, and burned on the street at Rouen. Her family, who had been ennobled on her account, obtained, 1440, a revisal of her trial; and 1456, the pope formally pronounced her to have been innocent. The verdict of history on this unfortunate girl is that she was of a nature generous, ardent, pure, and true, though excitable and liable to hallucinations.

Few facts in history are better authenticated than the death of 'the Maid' at Rouen 1431; yet grave doubts have been raised in this as in many similar cases. There was a popular belief at the time that some one had been executed in the place of Joan; and many pretended Maids appeared, who, however, were punished as impostors. But a Father Vignier, in the 17th c., found among the archives of Metz a paper purporting to be written at the time, and giving an account of the arrival at Metz, 1436, May 20, of the Maid Jeanne, who was at once recognized by her two brothers, and was subsequently married to a Sieur de Hermoise. Vignier afterward found in the family muniment-chest of M. des Armoise, in Lorraine, a contract of marriage between 'Robert des Armoise, Knight, with Jeanne D'Arcy, surnamed the Maid of Orleans.' In addition to this, there was found, 1740, among the archives of the Maison de Ville of Orleans, under the dates 1435, 1436, a record of certain payments to a messenger bringing letters from Jeanne the Maid, and also to her brother John du Lils or Lys. (De Lys was the name, by which the family of Darc was ennobled.) A subsequent entry, 1439, Aug. 1, records a gift on the part of the council of the city for services rendered by her at the siege.—See Quicherat's *Condamnation et Rehabilitation de Jeanne d'Arc* (1850); Delepierre's *Doute Historique* (1855); Wallon's *Jeanne d'Arc* (1867). She was beatified in 1894 by Pope Leo XIII.

JOB, v. *jŏb* [Ir. and Gael. *gob*, the beak or bill of a bird: W. *gwp*, a bird's head and neck]: in *OE.*, to peck with the beak as a bird; to strike suddenly with a sharp instrument. JOB'BING, imp. JOBBED, pp. *jŏbd.*

JOB, n. *jŏb* [OE. *gob*, or *job*, a portion, a lump; *jobbel*, or *jobbet*, a small load: OF. *gob*, a mouthful]: a piece of chance or odd work; a certain amount of work; a piece of work undertaken at a stated price; a disreputable transaction or undertaking for profit, effected by one secretly, under the guise of public zeal, or under the shadow of official power. V. to buy and sell, as a broker; to work at chance employment; to hire out or let, as horses. JOB'BING, imp.: ADJ. buying and selling, as a jobber: N. the practice of taking jobs for profit; the purchasing from importers in order to sell to retailers. JOBBED, pp. *jŏbd*. JOB'BER, n. *-bėr*, a person who undertakes to perform small pieces of work; a dealer on the Stock Exchange who is the intermediate agent between the stock-broker and the public; a petty dealer in cattle, etc. JOB'BERY, n. *jŏb'bėr-ĭ*, the unfair means used to accomplish some party object or questionable act. JOBBING OFFICE, a printing office where small jobs are undertaken, as the printing of handbills, etc. JOB-LOT, a lot of odd or rejected goods, sold at a considerable reduction. JOB-MASTER, one who lets out horses and carriages. JOB-PRINTER, one in a small way of business. BY THE JOB, at a stipulated price for the piece of work. *Slang*, TO DO THE JOB FOR, to kill.

JOB, *jōb* [Heb. *Jyob*, derived by Gesenius from *ayab*, 'to be an adversary;' hence (passive) 'one who has an adversary,' or 'a persecuted one']: leading personage in one of the canonical books of the Old Testament, the book of Job. He is said to have lived in the land of Uz (Sept. *Ausitis*, cf. Ptol. v. 19. 2), a locality somewhere between Idumea, Palestine, and the Euphrates. Whether Job was a real or a fictitious personage, has been discussed by critics. The Talmud (Baba Bathra, xv. 1) holds that 'Job *never was, and never was created*, but is an allegory.' The belief of most scholars at present is that the Book of Job is a great dramatic poem, built on a basis of historical tradition. Job is a real person whose life supplied a certain genuine groundwork of antique fact; and on this was built up a structure of incident, sentiments, and speech, by the creative power of a sublime and inspired imagination. Who was the author, and when he lived, has not been determined. Some critics make him anterior to Moses; the LXX. identifies him with 'Jobab, King of Edom' (Postscr. to Job); others, among whom are many of the Talmudical authorities, regard Moses himself as the author. The Mosaic *period* is claimed for it by Saadia, many of the church fathers, Michaelis, Jahn, Hufnagel, etc. More probable for some reasons is the view of Gregory Nazianzen, Luther, Döderlein, and others, who assign the work —which shows a certain affinity with the Proverbs—to the age of Solomon, when Hebrew poetry was in its full bloom, and a broad catholic spirit pervaded the

nation; some have even given Solomon himself the credit of its composition. The reference to the gold of Ophir seems conclusive against any hypothesis at least that would place its composition earlier. Certain passages in Ezekiel, Jeremiah, Isaiah, Amos, point to an acquaintance with it; yet Rénan considers that it belongs to the first half of B.C. 8th c.; and Ewald pronounces for a still later period, and assigns the poem to the beginning of B.C. 7th c. This date is advocated also by Dr. Samuel Davidson in his *Introduction to the Old Testament* (Lond. 1862). Others, again—among whom Clericus, Grotius, Gesenius, Umbreit, Knobel, DeWette, etc.—place it in the period of the exile. The period of Solomon seems on the whole to many eminent recent scholars the most probable date; though it cannot be denied that on this theory the lack of any reference to the Mosaic law, the priesthood, the temple, the sacrifices, and to the Hebrew history, is very difficult of explanation if the writer was a Hebrew.

The earlier German scholars, Herder, Eichhorn, etc., looked upon the author as an Edomite—not a Hebrew at all; but this view is now generally abandoned. The poem is a genuine product of the Hebrew muse, not, however, standing on narrow national ground—the very scene being laid in a foreign country—but on the broad ground of a universal humanity:—it is the attempt of a Hebrew thinker, of enlarged mind, to vindicate the Divine government of the world.

Concerning the design of the poem, various theories have been advanced. According to Dr. Davidson, it was 'to demonstrate the insufficiency of the current doctrine of compensation.' It condemns the notion that there is a *necessary* connection between sin and suffering, and without explaining the *cause* of the latter in the case of a good man, displays the most sublime trust in the wisdom of the Divine Providence. It exhibits a noble spirituality; and in several places, the mysterious contradictions of life seem to awaken in the soul of the writer thoughts of another life beyond the grave, in which God will vindicate the righteousness of His ways. As a work both of genius and art, it occupies well-nigh the first rank in Hebrew literature, and is unsurpassed in sublimity of imaginative thought by any poem of antiquity. The language is a wonderful combination—elaborate in the highest degree, yet grandly simple withal, betokening not a primitive period in Jewish history, but one highly advanced. The dramatic construction of the poem indicates the same. It has a prologue and epilogue; the dialogues are arranged into three series; each of these, again, consists of three speeches by Job's friends, with three replies by Job himself. The three friends are unsympathetic in feeling, and harsh in speech with the harshness which pertains to a self satisfied righteousness. The fourth, Elihu, adds the element of

youthful positiveness and censoriousness. Job spreads out a doleful and pathetic complaint, refusing to plead guilty to the accusations which his friends offer as consolations; and while in the main nobly keeping his trust and submissiveness toward God, yet is driven in his agony, and under the taunts of his wife and the persistent charges of his friends, to the use of hasty words, complaining that God appears as his enemy, and challenging the Most High to bring forth against him the hidden sins of which he had been accused. For this God reproves him, but also restores and comforts him. The poem (properly so called) opens and closes with a monologue by the author of the book. The different character of the persons introduced is skilfully observed; their words have a rhythmic flow; and the dialogues are even strophically divided (see Ewald, *Das Buch Job übersetzt und erklärt, Zweite Auflage*). The integrity of the poem in its present form has been strongly questioned by many critics—e.g. Delitzsch; the evident inferiority (in a literary and poetic point of view) of the passages containing the speeches of Elihu (xxxii.–xxxvii.), and less evidently the nature of the prologue and epilogue, are thought to indicate that these passages are the work of a later hand. Compare the commentaries of Schultens, Bertram, Eichhorn, Rosenmüller, Ewald (with translation), Umbreit, De Wette, Hirzel, Stickel, Schlottmann, Rénan (with an admirable translation into French), Lee, Dillmann, Cox, A. B. Davidson. In the recent Canterbury revision of the Bible, the Book of Job gains greatly in clearness, vividness and power—both as to its deep philosophic thought and as to its sublime poetic imagery.

JOBE, v. *jōb* [after *Job* the patriarch]: in *university slang*, to reprimand; to take to task. Jo'BING, imp. JOBED, pp. *jōbd*. JOBATION, n. *jō-bā'shŭn*, a taking to task, as in the case of Job by his friends; a scolding.

JOB'S TEARS (*Coix lachryma*): a corn-plant of India: a grass, rising to the height sometimes of 8 ft., with the stout habit of maize, to which it is botanically allied; but the male and female flowers grow close together in spikelets, produced in axillary clusters. The name is from the tear-like form of the hard, shining, bluish-white seeds, which are sometimes made into bracelets and necklaces, and are also an article of food. This plant is cultivated in many parts of India, but it is one of the least valuable of the cereals. It has become almost naturalized in Spain and Portugal, and flour made from it is there used, though chiefly as a resource of the poor in times of scarcity.

JOB, WELL OF: a deep well, the biblical 'EnRogel' (Josh. XV : 7) and the modern Bir Ayyeb, situated just below the junction of the Valley of Hinnon with that of Jehoshaphat, the Kidron being there 345 feet lower than

the level of the Temple plateau. There are many references to this well in modern writers, although it was dsignated in some earlier works as 'Well of Nehemiah,' 'Well of Fire,' and 'Well of Jeremiah.'

JOCELYN, NATHANIEL, American portrait painter: b. New Haven, Conn., 1796, Jan. 31; d. there 1881, Jan.13. At 18 he was apprenticed to an engraver, but after three years his early love for painting asserted itself and he established himself as a portrait painter at New Haven in 1820. He was for some time resident in Savannah, where he painted many portraits, but returned to his native town where his work was very popular and where from 1825 to 1835 he painted the portraits of many notables, not a few of which are preserved in Alumni Hall at Yale. His fame extended beyond the limits of his State and he exhibited at the Academy of Design on several occasions. At the age of 80 he painted *Ocean Breezes,* a successful work of fancy, and his only one. His portraits have been greatly prized by critics. Jocelyn was a staunch anti-slavery man, and his home in New Haven was long one of the stations on the Underground Railroad. He was for many years the senior partner of a bank-note engraving company in New York which subsequently became the American Bank Note Company, resigning from the latter in 1867.

JOCKEY, n. *jŏk'ĭ,* JOCK'EYS, n. plu. *-ĭz* [from *Jackey,* a dimin. of *Jack:* Scot. *Jockie,* a dimin. of *Jock*]: a man or boy that rides horses in a race; a dealer in horses; a cheat: V. to play the jockey toward; to cheat; to deceive in trade. JOCK'EYING, imp. *-ĭ-ĭng:* N. the act of one who jockeys; the act of maneuvering. JOCK'EYSHIP, n. management or maneuver, as of a jockey; clever tactics. JOCKEYED, pp. *jŏk'ĭd,* cheated. JOCK'EYISM, n. *-ĭ-ĭzm,* the practice of jockeys in riding or cheating.

JOCOSE, a. *jō-kōs'* [L. *jŏcōsŭs,* jocose—from *jŏcŭs,* a joke or jest]: given to jokes and jesting; containing a joke; merry; sportive; waggish. JOCOSE'LY, ad. *-lĭ.* JOCOSE'NESS, n. *-nĕs,* the quality of being jocose; waggery. —SYN. of 'jocose': facetious; jocular; witty; pleasant; comical.

JOCULAR, a. *jŏk'ū-lėr* [L. *jŏcŭlārĭs,* jocular, droll—from *jŏcŭs,* a joke]: given to pleasantry; sportive; merry. JOC'ULARLY, ad. *-lĭ.* JOC'ULAR'ITY, n. *-lăr'ĭ-tĭ,* merriment; disposition to jest; jesting.—SYN. of 'jocular' —see JOCOSE.

JOCUND, a. *jŏk'ŭnd* [L. *jocun'dus,* pleasant, agreeable —from *jŏcŭs,* a joke]: lively; gay; light-hearted. JOC'UNDLY, ad. *-lĭ.* JOC'UNDNESS, n. *-nĕs,* or JOCUNDITY, n. *jŏ-kŭn'dĭ-tĭ,* state or quality of being jocund; mirth.

JODELN, *yō'dln:* peculiar manner of singing with the falsetto voice in harmonic progressions, heard only among the Tyrolese and the Swiss.

JODHPUR. See JOUDPORE.

JOEL, *jō'ĕl* [Heb. Jehovah is God]: son of Pethuel, one of the 12 Minor Prophets, who delivered his predictions, according to some, in the days of Joash; others, however, place him variously, in the time of Hezekiah, Manasseh, Josiah, Uzziah, etc. Concerning the circumstances of his life, absolutely nothing is known. The occasion of his prophecy was an extraordinary plague of locusts, accompanied by an extreme drought, which consumed the land. After describing these judgments, the prophet calls upon his countrymen to repent, and assures them that God is ready to forgive. Extraordinary warmth and tenderness of feeling, with an enthusiastic belief in the glory of the future destiny of the people, run through the whole book. Some of the passages have been understood by theologians as predictive of the blessings of the Messianic age, and one is actually applied by the apostle Peter to the events which transpired on the day of Pentecost (Acts, ii. 16–21). The style of Joel, always vivid and eloquent sometimes sublime, is perhaps the finest of any Old Testament writers. One of the most elaborate works on Joel is Credner's *Der Prophet Joel.* Compare Ewald, Umbreit, Henderson, etc.

JOE MILLER, *jō mĭl'lėr,* a jest-book: a person on whom all kinds of jests were fathered; a stale joke.—JOE MILLER'S JESTS, or THE WIT'S VADE MECUM, a well-known collection of facetiæ, first published 1739. A great proportion of the good things which this book contained appears to have been the product of the period immediately preceding its publication. They are more often humorous than witty. The 'Joe Miller' was Joseph Miller (prob. 1684–1738; b. prob. in London) an eminent comic actor who was a great favorite with the public, and is said to have contributed by his acting to the popularity of Congreve's plays. Ben in *Love for Love,* Sir Joseph Wittol in the *Old Bachelor,* and Teague in the *Committee,* were the characters in which he was most successful. The compiler of the *Jests* was John Mottley (1692–1750, Oct. 3; b. London); an author of little reputation. He also produced five or six plays—the first of them named the *Imperial Captive*—which had some success. He seems to have had the patronage of people of fashion and of the court. In 1739, the year in which he produced *Joe Miller's Jests,* he published also a Life of the great Czar Peter, 3 vols. 8vo. This work was published by subscription, and had the support of the royal family, and of a great number of the nobility and gentry. He followed it, 1744, with the *History of the Life and Reign of the Empress Catherine of Russia,* 2 vols. 8 vo. These works were mere compilations from the journals and other publications of the time; but with the lapse

of time they have acquired some value, through the scarcity or disappearance of the authorities on which they were founded.

JOG, v. *jŏg* [Gael. *gagaich*, to stutter; *gog*, the nodding or tossing of the head; comp. Gael. *seog=shŏg*, to dandle, to swing to and fro: W. *gogi*, to shake (see JAG)]: to move, push, or touch gently by way of reminder; to push with the hand or elbow; to shake slightly; to walk or travel slowly, idly or heavily: N. a slight shake; a push. JOG'GING, imp.: N. a slight push or shake. JOGGED, pp. *jŏgd*. JOGGER, n. *-ẹr*, one who walks slowly and heavily. JOG-TROT, n. [comp. Gael. *diog=jŏg*, a slight effort]: a swinging motion in walking; a slow regular pace or motion: ADJ. easy-going; simple. JOGGLE, v. *jŏg'l* [dim. of *jog*]: to shake slightly; to give a sudden but slight push to. JOGGLING, imp. *jŏg'ling*. JOGGLED, pp. *jŏg'ld*. JOGGLE, n. in *masonry*, notch or curve in the joints, adopted in fitting stones together, to prevent them from slipping.

JOGGLE. See JOG.

JO'GHIS. See YOGA; YOGIN.

JOGUES, *zhōg*, ISAAC, French missionary among the North American Indians: b. Orleans 10 Jan. 1607; d. Ossernenon, near the present Awnesville, Montgomery County, N. Y., 18 Oct. 1646. He became a Jesuit at Rouen in 1624, and, after some years passed in study and teaching, was ordained in 1636. At his own request he was immediately sent to the Huron mission in Canada. In 1639 he undertook a mission to the Tobacco Nation, in 1641 preached to the Algonquins at Sault Sainte Marie, not long after went to Three Rivers for supplies for the Huron Mission, and upon his return was captured by the Mohawks and severely tortured. He remained among the Indians as a slave, until the summer of 1643, when he made his escape to the Dutch settlement of Rensselaerswyck (Albany), and was conveyed thence to New Amsterdam. He finally reached France, where he was treated with great consideration, and invited to court. Returning to Canada, he traveled to the Mohawk country in May 1646, in the capacity of an ambassador to conclude a treaty between that people and the French. Ascending the Sorel, he passed through Lake Champlain and Lake George, which he named Lac Saint Sacrement. Having ratified the peace he returned to Quebec, and after a few days' rest set out for the Mohawks again, this time as the founder of the Mission of the Martyrs. He was soon tortured as a sorcerer, and finally killed. Consult: Martin, trans. by Shea, *Father Isaac Jogues* (1896); Parkman *The Jesuits in North America* (new ed. 1898).

JOHANNA, *jō-hăn'a:* one of the Comoro Islands (q.v.).

JOHANNES, n. *jō-hăn'nēz* [Gr. *Iōăn'nēs*, John]: a Portuguese gold coin of the value of eight dollars.

JOHANNESBURG, *yō-hân'nĕs-bôrg* or *jō-hăn'nĕs-bėrg*, South Africa, the metropolis of the Transvaal Colony, situated 5,500 feet above the sea, about 30 miles southwest of Pretoria, with which and with Delagoa Bay 397 miles, Durban 483 miles, East London 668 miles, Port Elizabeth 715 miles, and Cape Town 1,015 miles, it is in railway communication. It is the recognized business centre of the rich gold fields of the Witwatersrand, and the largest town in the Transvaal. In 1886 it was represented by a few shanties, but the discovery of gold and the development of gold mining made it within a comparatively few years one of the most important towns of South Africa. Municipal government was conferred upon the city by the Transvaal authorities in 1896, when the population within a three-mile radius was 102,078. The great Uitlander agitation which culminated in the Transvaal war 1899–1902, centred in Johannesburg, which was occupied by Lord Roberts in 1900. Since the close of the war, important public improvements to cost $30,000,000 have been begun. These include many miles of well-paved streets, an elaborate electric car system, new waterworks, sanitation system, a factory section, and handsome suburbs. Mementoes of the former Boer rule are an imposing but dismantled fortress which dominates the town, and the monument near Krugersdorp which commemorates the declaration of Boer independence in 1880. Among the notable buildings and institutions are: many fine hotels, clubs, etc.; a handsome railway station lighted by electricity; the market buildings in the large Market Square, where also are the post and telegraph offices and the buildings of the chamber of mines; the fine public library building; the stock exchange; the court-house; many churches; a synagogue; a good hospital; a jail and a police barracks, and a new theatre and opera house. The town is lighted partly by gas but mainly by electricity.

There are 160 incorporated mining companies employing 40,000 natives. Prior to the war 96,000 natives were working in the mines; 124 of the mining claims are located on the main reef and the others in the neighborhood of Klerksdorp. Prior to the war the gold production was valued at $7,000,000 a month, and the machinery employed was estimated at $100,000,000. The industry is fast recovering itself, and it is estimated that within a few years the annual production of gold will be equal to $121,500,000.

JOHN, n. *jŏn* [new L. *Johan'nēs;* Gr. *Iōăn'nēs*, John]: a common Christian name. JOHN BULL, *-bûl*, a name applied to the whole English people, sometimes as a term of depreciation, and sometimes of high praise.

JOHN-A-DREAMS, one given to day-dreaming and building castles in the air; a sleepy-headed, dull man. JOHN DORY, an excellent fish, common in the European seas: see DORY.

JOHN: Apostle of the Lord Jesus, and Evangelist: b. Bethsaida; son of Zebedee (a fisherman of the Sea of Galilee) and of Salome. Till John was called by the Lord Jesus to be his disciple, he seems to have followed his father's occupation. After the outpouring of the Spirit on the day of Pentecost, J. appears to have labored for the spread of the Gospel first in Jerusalem and Samaria, and afterward to have had his residence chiefly in Ephesus. During the reign of Emperor Domitian, he was driven by persecution to the isle of Patmos, but returned to Ephesus under Nerva, and died there at a great age. The dates assigned to this event range from A. D. 89 to 120, and in any case he must have long survived his brother apostles. It is believed that he was the only one of the Lord's apostles who died a natural death. Tradition accounts for this by representing his life as miraculously preserved. He is represented in Scripture as of a peculiarly affectionate nature, 'the disciple whom Jesus loved;' and tradition makes his last words to have been, 'Little children, love one another.' The works attributed to him are the Gospel, the Three Epistles of John, and the book of the Revelation. These were the ripened product of his later years in which he seems to have been led into the sphere in which he wrought a work as special and unique as that of the Apostle Paul in his sphere. Paul gathered converts and established churches, John brought into prominence those deep and vital truths concerning the Christ which are the centre of all Christian experience and life. The opening words of his Gospel are like a mighty surge rolling in from an ocean of eternal truth. More than any other of the inspired writers, he also lays open the inner heart of Christ. See JOHN, THE GOSPEL, etc.; JOHN, THE EPISTLES OF; REVELATION OF JOHN, THE.

JOHN XII., Pope: 938–964 (reigned 955–964); son of Alberico, and grandson of the notorious Marozia, a woman who, during the pontificate of John X. (913–927), ruled with almost supreme power at Rome. John was originally named Octavianus, and on the death of Pope Agapitus 955, being elected pope through the lawless intrigue or violence of the dominant party, when only in his eighteenth year, was the first in the papal line to originate the now familiar practice of changing his name. His life, according to accounts which it is impossible to discredit, was what might be expected from such antecedents, scandalous and disorderly; and though he had crowned Otho emperor and king of Italy 962, that monarch in 963, in a synod of the clergy, overstepping all the ordinary rules of canonical proce-

dure and legal precedent, caused sentence of deposition for scandalous life to be pronounced against John, and Leo VIII. to be elected in his stead. John, however, re-entered Rome in the following year with a strong party, and drove out Leo; but his career was cut short by a dishonorable death: he was killed, according to Luitprand, while prosecuting an unlawful intrigue 964. In his effeminacy or licentiousness, Panvinius and other historians find the origin of the fable of Pope Joan.

JOHN XXII. (JACQUES D'EUSE), Pope: reigned 1316–1334; d. 1334; one of the most celebrated of the popes of Avignon. He was elected pope on the death of Clement V. Attempting to carry out in very altered circumstances, the vast and comprehensive policy of Gregory VII. and Innocent III., John interposed his authority in the contest for the imperial crown between Louis of Bavaria and Frederick of Austria, by not only espousing the cause of the latter, but even excommunicating the latter. The public opinion, however, and the political relations of the papacy founded upon it, had already begun to change. The diet of Frankfurt refused to obey, and a long contest ensued, not only in Germany, but also in Italy, where the Guelph or papal party was represented by Robert, King of Naples, Frederick of Sicily being the chief leader of the Ghibellines. The latter was placed by John under the same ban which had already been proclaimed against Louis; but 1327, Louis came to Italy in person, and having been crowned at Milan with the iron crown, advanced upon Rome, expelled the papal legate, and was crowned emperor in the church of St. Peter's by two Lombard bishops. Immediately on his coronation, he proceeded to hold an assembly, in which he caused the pope, under his original name to be thrice summoned, to answer a charge of heresy, and breach of fealty; after which he caused him to be deposed, and Peter de Corvara, a monk, to be elected pope, under the title Nicholas V. These measures, however, were attended with little result. Louis returned to Germany, and the Guelphic predominance at Rome was restored, the papal representative resuming his authority. But John XXII. never personally visited Rome, having died at Avignon 1334, when, though without incurring the suspicion of personal aggrandizement, he had accumulated in the papal treasury by means of *annates* (q.v.), the enormous sum of 18,000,000 florins of gold. John's persistent animosity to the Franciscans was one of the influences which prepared the way for the Reformation. This pope is remarkable in theological history as the author of that portion of the canon law called the *Extravagantes;* also as having held the opinion, pronounced heretical by most theological authorities, that the just at death fall asleep, and will not be admitted to the beatific vision in heaven until after the general

resurrection. This opinion, which he had ardently advocated, he formally retracted before his death.

JOHN (LACKLAND), King of England: 1167, Dec. 24—1216, Oct. 19 (reigned 1199–1216); b. Oxford; third King of the Plantagenet family; youngest of the five sons of Henry II. by his wife, Eleanor of Guienne. His father having obtained a bull from the pope authorizing him to invest one of his sons with the lordship of Ireland, John was appointed in a council at Oxford 1178, and 1185, Mar., he went over to take the reigns of government, but governed so badly that he was recalled in the following December. John latterly united with his brothers in their rebellions against their father, and it was the sudden communication of the news of his having joined his brother Richard's rebellion that caused the death of Henry.

When Richard I. succeeded to the crown, he conferred on his young brother earldoms which amounted to nearly one third of the kingdom. This did not, however, prevent John endeavoring to seize the crown during Richard's captivity in Austria. John was, however, pardoned, and treated with great clemency, and is said to have been nominated his successor by his brother on his death-bed. John hastened, at his brother's death, to obtain the support of the continental barons, and then started for England and was crowned at Westminster. Arthur, son of his elder brother Geoffrey, was lineally rightful heir to the crown, but at this time the law of primogeniture was not perfectly established. The claims of Arthur were supported by Anjou and the king of France, but John bought off the latter' influence. John now obtained a divorce from his first wife, Hadwisa of Gloucester, and married Isabella of Angoulême. In the war which ensued, Arthur, who was again assisted by France, was taken prisoner, and confined in the castle of Rouen, where there is every reason to believe that he was privately put to death; but the English monarch lost Normandy, Touraine, Maine, and Anjou.

John now quarreled with Pope Innocent III., refusing to accept as Abp. of Canterbury Stephen Langton (q.v.) whom the pope had appointed. Innocent placed the kingdom under an interdict; while John, in return, confiscated the property of the clergy who obeyed the interdict, and banished the bishops. Otherwise, too, he displayed considerable activity. He compelled William, King of Scotland, who had joined his enemies, to do him homage (1209), put down rebellion in Ireland (1210), and subdued Llewellyn, the independent prince of Wales (1212). The pope, 1213, solemnly deposed John, and absolved his subjects from their allegiance, and commissioned Philippe Auguste to execute his sentence. John, denounced by the church, and hated for his cruelty and tyranny by his subjects, found his position untenable, and was compelled to make abject submission to Rome,

and hold his kingdom as a fief of the papacy. Philippe proceeded with his invasion scheme, though no longer approved by Rome; but the French fleet was totally defeated in the harbor of Damme, 300 of their vessels being captured, and above 100 destroyed. Subsequent events, however, proved more favorable to France, and at length the English barons saw the opportunity to end the tyranny of John: they drew up a petition, which was rejected by the king, and this was the signal for war. The army of the barons assembled at Stamford, and marched to London, they met the King at Runnymede, and as the city of London gave its adhesion to the barons and the king found himself abandoned by all, he yielded; and the Great Charter, the basis of the English constitution, was signed 1215, June 15 (see MAGNA CHARTA). The pope disapproved, and soon annulled the charter, and the war broke out again. The barons now called over the dauphin of France to be their leader, and Louis landed at Sandwich 1216, May 30. In attempting to cross the Wash, John was overtaken by the tide, lost his regalia and treasures; was taken ill, and died at Newark Castle. Beside the granting of Magna Charta, John's reign was signalized by the absorption of the Norman nobility into the English people, resulting from the separation of Normandy from the English possessions; and by the beginning of public discontent with papal domination of the government.

JOHN III. (JOHN SOBIESKI), King of Poland: one of the greatest warriors of the 17th c.: 1624, June 2—1696, June 17 (reigned 1674–96); son of Jakob Sobieski, Castellan of Cracow, a man of virtuous character and warlike spirit, who educated John and his brother Mark with utmost care. The brothers travelled in France, England, Italy and Germany. Their father's death recalled them home 1648. The Poles were defeated by the Russians in the battle of Pilawiecz. The Sobieskis took up arms to restore the fortunes of their country. Mark fell in battle on the banks of the Bog; John distinguished himself by his valor, and became the admiration of his countrymen and the dread of the Tartars and Cossacks. He received the highest military dignities and appointments, and 1673, Nov. 11, defeated the Turks in the great battle of Choczim, in which they lost 28,000 men; after which he was, 1674, May 21, unanimously elected king of Poland, and was crowned in Cracow with his wife, Maria Casimir Louisa, daughter of the Marquis Lagrange d'Arquien, and widow of the woiwode John Zamoiski. When the Turks besieged Vienna 1683, John hastened thither with 20,000 Poles, and with the German auxiliaries who had also come up, raised the siege by the victory of Sep. 12 of that year. In this battle he took the banner of Mohammed, which he sent to the pope. On his entrance into Vienna he was received with unbounded enthusiasm by the inhabitants. His subsequent under-

takings against the Turks were not equally successful. He died of apoplexy. John Sobieski was not only a statesman and warrior, but a lover of science, and a man of gentle disposition and agreeable manners; but his constant wars prevented that attention to the internal condition of Poland which its critical situation urgently required, and this misfortune occasioned his neglect of evils which were among the causes of the downfall of Poland.

JOHN, Baptist Joseph Fabian Sebastian: Archduke of Austria; distinguished Austrian prince and general: 1782, Jan. 20—1859, May 10; sixth son of Emperor Leopold II., and of the infanta Maria Louisa, daughter of Charles III. of Spain. He early gave proof of talent for military affairs; and in 1800, he received command of the defeated Austrian army, formerly under Kray. His military career was not brilliant. He was defeated at Hohenlinden 1800, and at Austerlitz 1805. In the war of 1809, he advanced with an Austrian army into Italy, defeated the viceroy Eugène at Sacile, and made his way as far as the Adige, when the reverses of the Austrian forces at Landhut, Eckmuhl, and Ratisbon compelled him to retire. His love of natural science was early manifested and continued undiminished amid all the vicissitudes of his life; and Austria is indebted to him for many valuable scientific institutions and enterprises. Living in political retirement, and interested in public improvement, he became exceedingly popular; so that when the German national congress assembled after the commotions of 1848, he was called by a great majority of voices, June 29, to be Vicar or Regent of the Germanic empire. The fall of Metternich had also, in the meantime, released him from his political isolation in Austria; and Emperor Ferdinand had placed him at the head of affairs there, and intrusted to him the opening of a constitutional assembly in Vienna. In his high office as Regent, the archduke acted on strictly constitutional principles; but the progress of events being unfavorable to the Austrian interests, he resigned his office 1849, Dec. 20, and returned to Grätz, where he lived, as formerly, in retirement till his death.

His marriage was of the romantic kind. Late on a January evening in 1827, he had occasion for the services of the postmaster of Aussee, a mountain-village in the vicinity of Grätz. The postmaster was absent; but his daughter, Anna Ploehel, volunteered to drive him over the hill to his destination. The conversation and spirit of this maiden charmed the archduke, and within three weeks he married her. The titles of Countess of Meran and Baroness of Brandhof were subsequently conferred on her. See Morganatic Marriage.

JOHN of Damascus. Damascenus.

JOHN of Gaunt, *gânt:* or of Ghent, *gĕnt:* Duke of

Lancaster and Aquitaine, and titular King of Castile: 1339–1399, Feb. 3; b. Ghent; fourth son of Edward III. He married Blanche, daughter of the Duke of Lancaster, 1359; distinguished himself in the wars of his brother, the Black Prince, in France; was father of the first English king of the house of Lancaster, Henry IV., 1399; on the death of his wife married Constance, daughter of Peter the Cruel of Castile, and took the arms and title of king of Castile 1370; served in the wars in France and Scotland; invaded Castile and unsuccessfully attempted to wrest the throne from Henry of Trastamara 1386; became the friend and defender of Wickliffe on his return to England; married his daughter to Henry of Castile 1388; and for his third wife married Catherine Swynford, ancestress of the Beaufort and Tudor families. After the marriage of his daughter he returned to Castile, was created Duke of Aquitaine, and employed in embassies to France which resulted in a treaty of peace. Besides John's descendants in the direct male line who were English kings of the House of Lancaster, he was, through his daughters, the ancestor of more than one line of kings of other countries; and was ancestor, through his third wife, of the Tudor and Stuart sovereigns, and of James I. of England, whose descendants have reigned in England ever since.

JOHN OF SALISBURY, *sawlz'bėr-ĭ* about 1120–1180, Oct. 25; b. Old Sarum (Salisbury), England: scholar, orator, and poet. He was educated at Oxford Univ., and in France, where he attended the lectures of Abelard and studied the classics, theology, and scholastic logic; conducted a school in Paris; was forced by poverty to seek the hospitality of the abbey of Montier-la-Celle, returned to England, 1151; became secretary to Theobald, Archbishop of Canterbury and afterward to Thomas à Becket; went on several diplomatic missions to Popes Eugenius III., Anastasius IV., and Adrian IV.; supported à Becket in his controversy with Henry II., and accompanied him in exile and on his return to England; and was appointed bishop of Chartres, 1176. He wrote a number of works, of which the greatest are *Polycraticus, sive de Curialium Nugis et Vestigiis 'Philosophorum; Metalogicus; and Vita ac Passio S. Thomæ.* These, with 302 letters were published, 5 vols., Oxford 1848.

JOHN, ST. or SAINT (geographical). See ST. JOHN.

JOHN, SAINT, of NEPOMUK, *nā'pō-môk* (properly, POMUK): patron saint of Bohemia, saint of the Rom. Cath. Church, and honored as a martyr of the inviolability of the seal of confession: about 1330–1393, Mar.; b. Pomuk, village in the dist. of Klatau. Having entered into orders, he rose rapidly to distinction, being created a canon of the cathedral of Prague, and eventually vicar-gen. of the diocese. The queen, Sophia, second wife of Wenzel or Wenceslaus IV., having selected him for her

confessor, Wenceslaus, himself a man of most dissolute life, conceiving suspicions of her virtue, required of John to reveal to him what he knew of her life from the confessions which she had made to him. John steadfastly refused, and the king resolved to be revenged for the refusal. An opportunity occurred soon afterward, when the monks of the Benedictine abbey of Kladrau having elected an abbot, in opposition to the design of the king, who wished to bestow the place on one of his own dissolute favorites, John, as vicar-gen., at once confirmed the election. Wenceslaus, having first put him to the torture, at which he himself personally presided, had him tied hand and foot, and flung, already half dead from the rack, into the Moldau. His body, according to the tradition, being discovered by a miraculous light which issued from it, was taken up, and buried with great honor His memory was cherished with peculiar affection in his native country, and he was eventually canonized as a saint, his feast being on Mar. 20. By some historians, two distinct personages of the same name are enumerated: one, the martyr of the confessional seal; the other, of his resistance to the simoniacal tyranny of Wenceslaus; but the identity of the two is well sustained by Palacky, *Geschichte von Böhmen*, iii. 62.

JOHN THE BAPTIST: the forerunner of Christ: son of the priest Zacharias and of Elizabeth, who was a cousin of the Virgin Mary. John was thus the second cousin of the Lord Jesus. The wonderful circumstances of the conception and birth of John are recorded in Lk. i. After a life devoted to a stern preaching of repentance, and heralding of the coming Messiah, in the spirit and power of the old prophets of Israel, John was thrown into prison in the palace-fortress of Machærus on the e. side of the Dead Sea; and afterward was put to death by Herod at the request of his wife, Herodias, conveyed through her daughter. John had incurred the woman's hate, by denouncing her unlawful marriage to Herod. John's followers existed as a separate body till long after the spread of Christianity, and a sect still exists in the East professing to be his disciples. See CHRISTIANS OF ST. JOHN. John the Baptist was, from an early date, regarded in England as the patron saint of the common people, and on this account, apparently, great masonic festivals are held on St. John's Day, the day dedicated to him, June 24.

JOHN, THE EPISTLES OF: three canonical books of the New Testament. The genuineness of I. John is established by an abundance of very ancient testimony against which, as Oelshausen says, nothing can be affected by modern conjectures. Addressed to no particular church or region, it is commonly regarded as a general letter to the churches of Asia Minor among which John spent his later years.

Some conspicuous points of the revelation from Christ which the epistle contains, are the following: 1. Concerning God: that in holiness, truth, and love, He is best represented by Light in its purity, glory, and diffusion. 2. Concerning mankind: that they are ungodly, walking in moral darkness, and under the influence and works of the evil one. 3. Concerning the redemption which the love of God has provided through his son: that Christ became the propitiation for the sins of the world; that they who (believing in him) confess and renounce their sins, obtain as a free gift forgiveness and eternal life; that the old commandments of the moral law are accepted by them in the spirit of a new obedience as the perfect rule of life; that the new commandment to love their fellow men takes possession of their souls; that they are instructed by the Holy Spirit to distinguish truth from error and holiness from sin; that, cherishing hope in Christ, they are impelled to purify themselves even as he is pure; that all who thus attest their faith are adopted as the children of God, and that this relationship is already an established reality, though its results cannot be fully developed until the glory of Christ is manifested, when the children of God will see Christ as he is; and will themselves be like him. At the beginning of the epistle, the apostle reiterates the testimony of those who had been eye-witnesses of the manifested glory of Christ as the Son of God. But besides this, he declares that there are three perpetual witnesses to the Divine nature and mission of Christ—'the Spirit, the water, and the blood.' 1. The Holy Spirit bears witness to Christ, in the Scriptures, in the progress of the Christian faith, and in living Christians. 2. The baptism of Jesus, consecrating him—and presenting also the Holy Spirit as a witness in visible form—testifies to Christ. 3. The blood of Christ shed in his death for the world, which death was glorified by his resurrection and ascension to the right hand of God, presented the crowning testimony of the Holy Spirit to His mission as the Son of God.

The second and third epistles, John II. and III., are well attested as genuine by external testimony; and in style, diction, and doctrine are harmonious with the first. While John I. addresses Christians in general, John II. and III. speak primarily to individuals: John II. to a Christian woman, gracious and beloved, whose name perhaps was Cyria, and whose children the apostle joyfully commends; John III. to a christian man, named Gaius, eminent for faith, uprightness, hospitality, and love.

JOHN, The Gospel according to: one of the canonical books of the New Testament; generally believed to have been written near the close of the 1st c.; at once widely diffused and universally cherished by Christian churches throughout the Roman Empire, as the genuine

work of the apostle John. See JOHN, the apostle. Some of the chief points of the abundant ancient testimony by which its genuineness is established are the following:

I. At the Council of Nice, 325, composed of eminent representative men from Christian churches east and west, this gospel was accepted as the standard authority and as universally acknowledged by the churches. In this judgment both the Orthodox Christians and the Arians were united. And as in the debate between them, relating to the proper divine nature of Christ, this gospel was fundamentally important to them both, if both had not been convinced of its genuineness, one of them would have disavowed, or at least disparaged, its authority. Therefore this council is, incidently, a great witness to the fact that in the early part of the 4th c., when Christianity had just been established as the religion of the empire, the gospel of John was universally acknowledged and used in the churches as his genuine work.

II. Origen's testimony covers a period nearly a century earlier than the Council of Nice. Born 184, and living until 253, he became eminent as a student and teacher of the Scriptures, having scholars from all parts of the empire, travelling also extensively in acquiring and imparting knowledge. Thus fully acquainted with the opinions and practice of Christians, within the first quarter of the 3d c. he affirms that 'the four gospels (see GOSPELS, THE), the last of which is John's, are the only undisputed ones in the whole church of God throughout the world.' III. The similar testimony of Clement of Alexandria dates probably about 25 years earlier. He too was a celebrated Christian teacher and travelled in Egypt, Italy, Greece, and Asia. Speaking of the four gospels, he says, 'John's was written last.' IV. Tertullian, living about the same time as Clement and eminent among the Latin Christians, declares, 'among all the churches that were united in Christian fellowship the gospel of John had been received from its first publication.' V. Irenæus, probably about 30 years earlier, says, 'John's gospel—the last of the four—was published at Ephesus.' VI. The Syriac version of the New Testament, made not later than the early part of the 2d c., contains the gospel of John, which consequently must have existed and been acknowledged before that time. VII. Justin Martyr, about 140, in his defense of Christianity presented to the emperor and senate, speaks of 'memoirs made by the apostles which are named gospels and are read on the day called Sunday in the assemblies of Christians.' That one of these was the gospel of John is shown by Justin's quotations from it and allusions to it. (1.) He speaks of Christ as 'the Logos who was made flesh and through whom God created all things.' (2.) He gives John the Baptist's confession, 'I am not the Christ but am the voice of a crier.' (3.) He quotes Christ as saying, 'Except ye be born again ye shall not

enter the kingdom of heaven;' and adds the objection of Nicodemus concerning the impossibility of being born a second time. (4.) He declares that 'Christ healed those who had been blind from their birth.'

VIII. In the first quarter of the 2d c., the Gnostics, a very numerous sect whose conception of Christianity was distorted by the Oriental philosophy in which they had been trained, acknowledged John's gospel; and endeavored, by forced interpretations of its meaning, to defend by it their peculiar doctrines. This proves that at that time, about a quarter of a century after John's death, the authority of his gospel could not be disputed. IX. Before this time, from the beginning of Christianity, John's oral preaching and teaching, had been widely spread abroad and were well known. In the midst of this knowledge the written gospel appeared, and, with a swiftness which for that time is amazing, copies of it were multiplied, circulated, and cherished by all the churches. The design of John's gospel, as declared by himself, is that the readers of it 'may believe that Jesus is the Christ the Son of God; and that, believing, they may have life in his name.' Among the great things set forth in it to be believed are the following: That the Logos existed in the beginning with God and as God; that through him all things were created; that he became man upon the earth, dwelling among men full of grace and truth, and manifesting his glory to chosen witnesses, of whom the writer of the gospel was one; that Jesus is the Messiah, the sacrifice for sin, and the Son of God; that regeneration is needed by all men in order to enter the kingdom of heaven; that the death of Christ was divinely appointed; that the love of God to the world has been supremely exhibited in the gift of His Son; that spiritual worship is acceptable to God everywhere and from all men; that Christ has power to raise the dead and to judge the world; that he is the light of the world and the giver of eternal life; that the Spirit of God sent in Christ's name is the advocate and guide of men, convincing them of sin and testifying to them of Christ; and that all who believe become the children of God, one with Christ and, in him, one with God. In the other gospels, while there are many gleams of divine glory irradiating the humiliation of Christ on the earth, there is one scene, on the high mountain apart, in which that glory transfigures his raiment, form, countenance, and condition. But in the gospel of John his whole incarnate life, death, and resurrection shine transfigured. As the presence of the book in the churches through all the centuries attests supremely its genuineness, so the glory of the being, character, and life of Christ, diffused through it, attests his divine nature.

JOHN B. STETSON UNIVERSITY: a coeducational school founded in 1883, at De Land, Fla., under the aus-

pices of the Baptist denomination. The institution was first called De Land University, but in honor of John Batterson Stetson who gave large gifts to the institution, nearly all of the buildings and the campus, the name has been changed. The departments are a preparatory, schools of music, law, art, and technology, a normal and practice school for teachers, a business college, and a college of liberal arts. The courses lead to the degrees of bachelor of arts, laws, and philosophy, and to degrees of bachelor of civil, electrical, and mechanical engineering. The school in 1898 made arrangements with the University of Chicago, whereby the graduates of the college of liberal arts, who have a high standing in their studies, may receive corresponding degrees from the Chicago institution. In 1907 the number of students in attendance was nearly 450 the number of professors and instructors 48. The endowment fund amounted to about $210,500.

JOHN C. GREEN SCHOOL OF SCIENCE. See PRINCETON COLLEGE.

JOHNNY-CAKE, n. *jŏn'nĭ* [a familiar application of the dimin. of the personal name *John* (see JACK)]: a cake of Indian meal quickly prepared at a common fire.

JOHN OF AUS'TRIA, or DON JUAN D' AUSTRIA: 1545, Feb. 24—1578, Oct 1; b. Regensburg; natural son of Emperor Charles V. It is uncertain who his mother was. He was early brought to Spain; and after the death of his father he was acknowledged by his half-brother, Philip II.; honors and an annual allowance were bestowed upon him, and he was educated with the Prince of Parma and the Infant Don Carlos. He was intended for the priesthood; but his own inclination was for military employment, and 1570 he received the command of an army sent against the rebellious Moors in Granada, whom he completely rooted out of the country—signalizing himself at once by valor and by cruelty. In 1571, he was appointed to command a maritime expedition—in which the forces of Spain, the pope, and Venice were united against the Turks—and defeated the Turks in a great battle near Lepanto (Oct. 7). Discord breaking out among the allies, Don Juan separated himself from the rest, took Tunis, and conceived the design of forming a kingdom for himself in n. Africa. But Philip, jealous of his design, sent him to Milan, to observe the Genoese; and afterward, 1576, as viceroy to the Netherlands. In this capacity, he sought to win the favor of the people by mildness; but being left unsupported by Philip, he was hard pressed for a time, till the arrival of the Prince of Parma with troops enabled him to restore the fortunes of Spain by the victory of Gemblours over William the Silent, 1577. But Philip was now apprehensive that Don Juan might make himself king of the Netherlands; and the untimely death of the latter in his

intrenched camp at Namur was not without suspicion of poison.—See Dusmenil's *Histoire*, and Havemann's *Leben* (Gotha, 1865) of John; and Sir W. Stirling-Maxwell's magnificent work on John (2 vols., 1883).

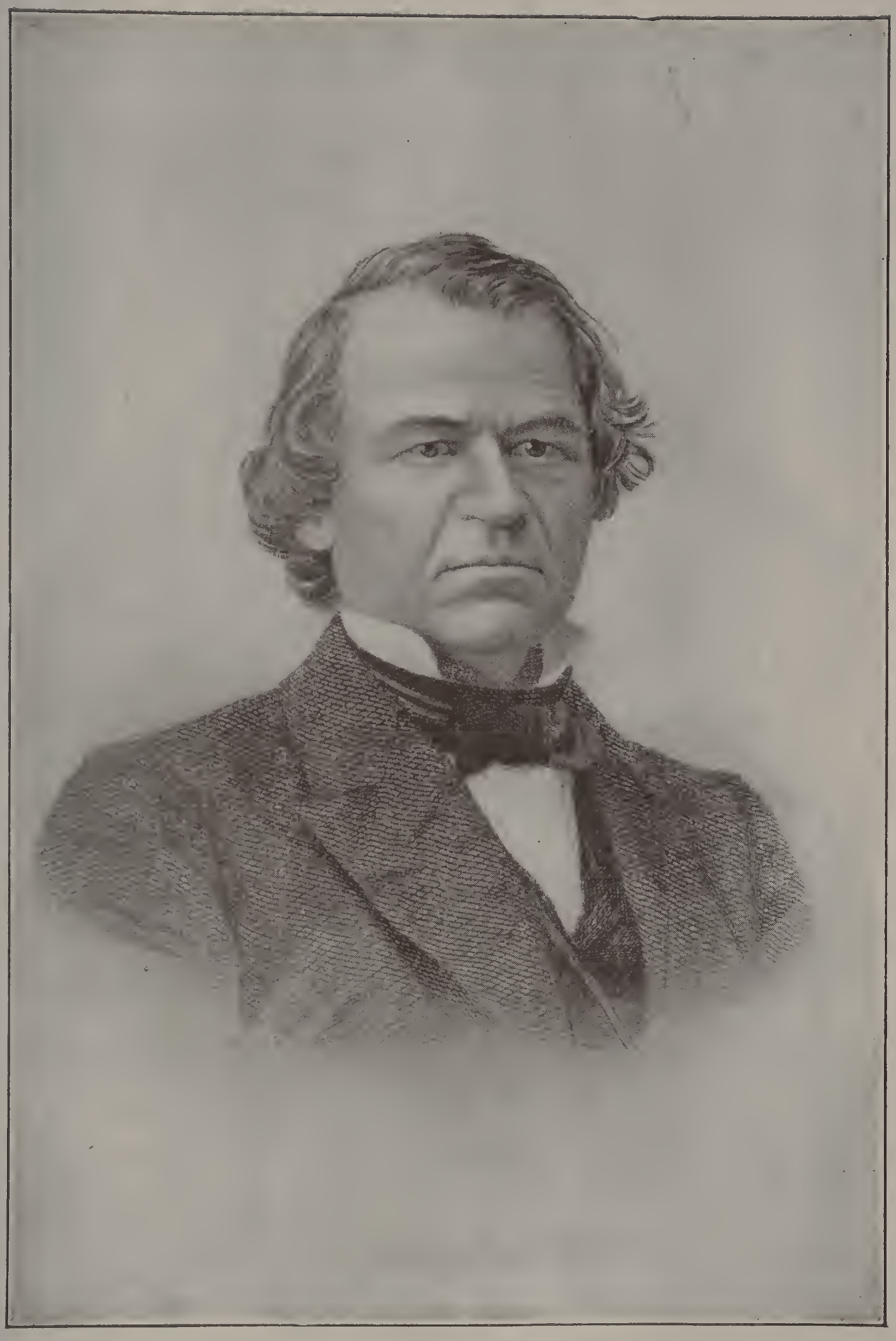
JOHN, Order of Saint, a military religious order of mediæval origin. The Knights Hospitallers of Saint John, subsequently known as Knights of Rhodes, and lastly as Knights of Malta, were once a great power in Christian Europe. The origin of the order is unknown, but most probably it was early in its history that a rich merchant of Amalfi built not far from the Holy Sepulchre at Jerusalem a certain church known as Santa Maria della Latina, with a monastery for monks, under the rule of Saint Benedict, and a hospital for pilgrims. The first patron of the order seems to have been Saint John the Compassionate, patriarch of Alexandria in the 7th century. Afterward Saint John the Baptist was chosen patron, and the Benedictine brethren assumed the title of Johannites, or Brothers Hospitallers of Saint John. Pope Paschalis II. in 1113 gave them the privilege of electing their own rector. Later, in addition to the vow of poverty, chastity and obedience they were pledged to make war upon the infidels, and assumed a black cloak with a white cross on the left side. The members were divided into three classes, knights of noble birth, the fighting class, priests bound to the service of the church, and brethren of service who took care of the sick and acted as guides to the pilgrims. In 1291 the order was driven from Palestine by the conquests of the Saracens, and after holding Cyprus for a time they occupied Rhodes in 1309, from which they were ultimately driven by Sultan Soliman II. in 1522. After that the knights retired to Candia and other places, but finally to Malta, which Charles V. granted them in 1530. Here they continued to be a bulwark of western Europe against the Turkish navies till modern times. The chief of this order, which had great possessions in almost every part of Europe was called 'Grandmaster of the Holy Hospital of St. John of Jerusalem, and Guardian of the Army of Jesus Christ.' He lived at Valetta, in the island of Malta. The military duty of the knights consisted in taking the field at least three times against the Turks or the pirates of Barbary. In war they wore a red jacket or tabard, charged with a white cross. In 1798 Malta was unexpectedly attacked and taken by Bonaparte, and about the same time the extensive properties belonging to the order in various countries were confiscated. This may be considered the end of the order as a vital institution, although shortly after the capture of Malta, Paul I., who had been chosen grand-master, took the order under his protection, and it still exists nominally at least. After the death of Paul the nomination of the head of the order was vested in the pope.

JOHN SCO'TUS. See ERIGENA, JOHANNES SCOTUS.

JOHNS HOPKINS UNIVERSITY: at Baltimore; founded by Johns Hopkins (q.v.) with his Clifton estate and $3,500,000, chartered by the state of Md. with power to confer degrees, and opened under the presidency of Daniel C. Gilman, LL.D., 1876, Oct. The founder of the univ. gave an endowment also of $4,500,000 for a large hospital to be connected with the univ. and to be free to all classes of patients excepting contagious cases. This was opened 1889, May 7. Free scholarships are open to deserving youth in Md., Va., N. C., and D. C.; there is a liberal scheme of free tuition; and there are 20 fellowships yielding $500 annually each. Instruction is provided for the following classes of students; (1) undergraduates and other candidates for the degree of B.A.; (2) first degree students desirous of pursuing advanced courses which may give them the degree of PH.D. (3) candidates for the degree of doctor of medicine; (4) doctors desiring to pursue further special studies; and (5) those simply desiring an education without the degree. It comprises Greek, Latin, Sanskrit, Semitic, Teutonic, and Romanic languages; history, political science, philosophy, and pedagogics, mathematics, astronomy, physics, physiology, chemistry, mineralogy, pathology, and morphology; and, since the opening of Johns Hopkins Hospital, medicine and surgery. The buildings include McCoy Hall, in which are the library, assembly room, and rooms appropriated to literary and historical studies; Levering Hall, the building of the Young Men's Christian Association; Hopkins Hall, equipped for the study of geology and mineralogy; a chemical laboratory; a biological laboratory; a physical laboratory; a gymnasium; an administration building; and four buildings for medical instruction.

In 1902 a large tract of land in the suburbs of the city, comprising 176 acres, was presented by several friends as a future site for the University, and it is expected that before many years it will be possible to remove the philosophical department thereto. This noteworthy gift was followed within a few months by a generous contribution, from alumni and citizens of Baltimore, of $1,000,000 toward the permanent endowment of the institution.

Connected with the university is the Johns Hopkins Press, from which issue the *American Journal of Mathematics; the American Chemical Journal; The American Journal of Philology; Memoirs from the Biological Laboratory; Studies in Historical and Political Science; Journal of Experimental Medicine; Beiträge zur Assyriologie; Modern Language Notes; Johns Hopkins University Circulars; Terrestrial Magnetism and Atmospheric Electricity;* etc. The several laboratories contain a large and costly collection of scientific apparatus, adapted both to instruction and original investiga-



ANDREW JOHNSON.

tion. In 1906–7 the univ. had 174 instructors; 600 students; 87 scholarships; grounds, building, and apparatus worth $1,211,211; productive funds $4,400,000; total income $311,870. Graduates since organization over 1,900. The univ. has a library of 130,000 volumes

JOHN'SON, ALFRED SIDNEY, journalist and educator: b. L'Original, Ont., Can., 1860, Dec. 15. Educated in the primary and public schools of his native place, subsequently graduated from the Ottawa Collegiate Institute, 1878, and from the Univ. of Toronto, 1883, receiving the gold medal in Mental and Moral Philosophy, Logic, and Civil Polity; and in 1885 the univ. bestowed upon him the degree of A.M. In 1888 he received the degree of PH.D. from the Wesleyan Univ. of Illinois. He was a Fellow in the University College of Toronto, 1883–86; examiner of the Univ. of Toronto, 1885–87; sub-examiner educational department of the Prov. of Ontario, 1883–86; instructor Psychology and Logic, Cornell Univ., 1886–87; principal Denmark, Iowa, Academy, 1887–90; also graduated from Govt. School of Military Instruction, Toronto, 1882, and was gazetted first lt. 18th batt. vol. militia, 1882, Feb. 16; member of Can. Institute and of the Buffalo, N. Y., Microscopic Soc., and in 1890, on the inception of *Current History*, he became its first editor, continuing in that position until 1901; in 1904 he became editor of the *Technical World*, and was on the editorial staff of the *Columbian Encyclopedia* for a considerable period; he also served as editor of the textbook department of the American School of Correspondence, Armour Inst. He was officially accredited by the Canadian Government as press correspondent accompanying the Solar-Eclipse Expedition sent to Labrador in 1905, and was elected an Associate Member of the Royal Astronomical Society of Canada.

JOHN'SON, ALVIN JEWETT: 1827, Sep. 28—1884, Apr. 22; b. Wallingford, Vt.: publisher. He was brought up on a farm, acquired a fair education, taught school some time in Va., and settling in New York 1853 became agent for C. C. Colton's *Atlas*. He afterward bought the plates, revised the entire work, and published it as *Johnson's Illustrated Atlas*. His success with this led him to publish a family and physical geography, *Facts for Farmers*, an *Analysis of the Bible*, and his chief work, *Johnson's Universal Cyclopædia*, with Pres. F. A. P. Barnard of Columbia College as editor-in-chief, Prof. Arnold Guyot as advisory editor-in-chief, and numerous scholars of distinction as associate editors in special departments.

JOHN'SON, ANDREW, LL.D.: 17th president of the United States: 1808, Dec. 29—1875, July 31; b. Raleigh, N. C.; son of Jacob J., porter in the N. C. state bank. His father, dying 1812, left his widow too poor to give Andrew any schooling. He was apprenticed to a tailor

when 10 years old, was stimulated to learn to read by hearing one of his master's customers declaim from *The American Speaker* portions of the parliamentary speeches of Pitt and Fox, was taught the alphabet by a fellow-apprentice, and applied all his leisure to reading whatever books he could obtain. Shortly before completing his apprenticeship, a boyish misconduct caused him to run away from Raleigh, and, walking to Laurens Court House, S. C., he worked there as a journeyman tailor from the summer of 1824 till 1826, May. He then returned to Raleigh, apologized to his master, offered to work out his unexpired time or pay for it, and, being unable to make any satisfactory arrangement, took his dependent mother and removed by wagon to Greenville, Tenn. He spent a part of 1826–7 searching for a place to establish himself in the tailoring business, married Eliza McArdle 1826, May 27, and finally concluded to remain in Greenville. His wife was the only daughter of a widow, and had received a good education for the time and place. From the marriage till her husband's death she proved a noble helpmeet and companion. He had learned to read before going to Greenville, but that was all. As soon as they were married, the wife undertook the education of her husband. She first taught him to write, then started him in arithmetic and led him to its higher branches, encouraged his ambition for historical study, and drilled him in extempore speaking. He worked at tailoring in the daytime and studied at night. His shop became the rendezvous of the workingmen of the locality, and within two years Johnson had gained such influence over them and had spoken so effectively against the attempts of the moneyed elements to control public affairs, that a workingmen's party was formed, and by it he was elected alderman by a large majority 1828. He was re-elected, and at the expiration of his second term was elected mayor, to which office also he was re-elected. By this time he had become a power in local politics, and having practiced public speaking while a member of a Greenville College debating society, began taking an active interest in state affairs. Soon after his induction into the mayor's office, his fame was largely extended by being selected by the co. court as a trustee of Rhea Academy. In 1834 his aggressive leadership took a wider range. He advocated the adoption of a new state convention, which among other desired reforms should contain provisions that would abridge the influence of the large landholders and capitalists, and to his efforts was largely due the constitution of 1834–5. In the latter year, after a spirited personal canvas of his district, he was elected a member of the legislature as a democrat. At the ensuing session he bitterly opposed a bill for expending $4,000,000 on new roads and other internal improvements; but the bill passed and for a time was so popular that his opposition to it cost him

his seat when a candidate for re-election 1837. With the subsequent discovery of frauds against the state and the abandonment of the work, the people again rallied round him and returned him to the legislature 1839. In the mean time he had taken hold of national politics. He supported Hugh L. White for the presidency 1836, was a strong partisan of John Bell in his controversy with James K. Polk, and declined to join the whig party. In the presidential canvass 1840, he was a candidate for presidential elector-at-large on the Van Buren ticket, and spoke in every part of the state. In 1841 he was elected a state senator. During his single term in the senate he distinguished himself by three acts: advocating a change of the basis of representation so that it should rest on white votes exclusively; aiding in preventing the election of a whig U. S. senator by refusing to participate in a joint session; and introducing a safe measure for some internal improvements that were needed in the e. part of the state.

In 1843 he was elected a representative in congress, and was re-elected for four successive terms. This service was characterized by his advocacy of the bill to refund with interest the fine of $1,000 imposed on Gen. Jackson while in command of New Orleans; support of the measures for the annexation of Texas and the settlement of the Oregon boundary dispute; defense of the Mexican war and the tariff of 1846; appeal for the adoption of a general homestead law; opposition to expenditures for specific internal improvements not possessing general interest; defeat of the proposed contingent tax on tea and coffee; and his plea in favor of the veto power. He was strongly opposed to all compromises, holding them to be surrenders of principles often vital; but as a matter of public expediency he supported the celebrated 'Omnibus Bill' (see COMPROMISE MEASURES of 1850). In 1853 he was elected governor of Tennessee, and 1855 was re-elected after a most exciting canvass, in opposition to a combination of whigs and 'know nothings' and in spite of repeated threats of assassination. On several occasions he appeared before hissing mobs with pistol in hand, called attention to the threats of personal violence made against him, invited anyone who had come to the meeting for the purpose of assassinating him to do it at once, and, on hearing no response put his pistol in his pocket and proceeded to deliver his speech. The fearlessness of the 'mechanic governor,' his grasp of public affairs, his keenness as a politician, and his unquestionable honesty, won for him many friends and made his opponents fear him. At the close of his second term as governor he was elected U. S. senator and took his seat 1857, Dec. 7. He at once became a conspicuous member of the senate. He renewed his advocacy of a general homestead law (which was adopted by both branches of congress and vetoed by President Buchanan 1860), op-

posed federal aid in the construction of the Pacific railroad, introduced and vigorously supported a bill providing for retrenchment in government expenses, urged the defeat of Jefferson Davis' bill for increasing the standing army on account of the Utah troubles, and, while acting with the democrats on general party measures, insisted that whatever might become of the question of slavery the institution should never be allowed to endanger the Union. In 1860 he was the presidential candidate of the Tennessee delegation in the Charleston-Baltimore democratic convention. In the ensuing canvass he actively supported Breckinridge and Lane, the candidates of the pro-slavery branch of his party. By the time congress met, 1860, Dec., he had been convinced that this branch of the party had determined to attempt the dissolution of the Union. He was both surprised and amazed at the situation, but did not falter an instant in what he conceived his duty. On Dec. 13 he introduced a joint resolution to amend the constitution so that the president and vice-president should be elected by district votes and U. S. senators by direct popular vote, that the terms of federal judges should be limited to 12 years, and that these judges should be chosen equally from the slave and free states. This resolution came before the senate Dec. 18, and rising in his seat, a Southerner, a democrat, and a slave-owner combined, he made his celebrated attack on those who were plotting the destruction of the Union, and announced his unalterable determination to support the federal government at all hazards. He spoke again on the resolution on the following day, reiterated his Union sentiments, and set forth eloquently the supreme folly and injustice of the proposed secession. His attitude at this time caused him to be most bitterly assailed throughout the southern states. In his own state he was denounced with the utmost virulence; and though the people had defeated a proposed call for a convention to decide the future action of the state, the feeling was so strong against him that the legislature itself voted the state out of the Union. In 1861, May, he returned to Tennessee. While passing through Liberty, Va., a mob entered his car with the intention of hanging him, but the leaders were overawed by his great coolness and his pistols. He was hooted and hissed at other places, and when he reached his home he learned that the people of nearly every city in the state were burning effigies of him. He was the most conspicuous figure at the conventions of the loyalists of eastern Tennessee May 30 and June 19, and there emphasized his position as a Unionist by demanding a vigorous prosecution of the war. During the winter 1861–2 his wife and child were turned out of their home and his slaves confiscated by the secession authorities of the state. A large number of Unionists were treated similarly, and all who could sought refuge in Ky. Whenever his official duties permitted,

he visited the refugees and supplied their necessities with his own money, and caused the government to establish Camp Dick Robinson for their shelter and protection. His refuge camp was the recruiting-ground of many companies of Union soldiers.

1862, Mar. 4, President Lincoln appointed him military governor of Tennessee with the rank of brigadier-general in the army, and resigning his seat in the senate he reached Nashville Mar. 12, and at once proceeded to organize a provisional government. His proclamations and speeches during the two following years attest the difficulty of his position, the effectiveness of his administration, and the pertinacity and courage of his nature. He announced that while it might be necessary to punish intelligent and conscious treason in high places, no merely retaliatory or vindictive policy would be pursued, that whenever a Union man was arrested and maltreated by marauding bands of secessionists, five of the most prominent rebels in the neighborhood would be arrested and imprisoned; and that whenever property of loyal citizens was taken or destroyed, full remuneration should be made out of the property of rebels in the neighborhood. He removed the mayor and council of Nashville for refusing to take the oath of allegiance to the federal government, started and encouraged the holding of Union meetings; preserved order in Nashville when it was threatened by the Confederates under Gen. Bragg, and prevented its surrender to him; assessed the wealthiest sympathizers with secession for the relief of widows, wives, and children in Nashville of men forced into the armies 'by the unholy rebellion;' ordered all agents and tenants of 'traitors' not to pay rents till the appointment of an officer to receive them for the federal government, and raised 25 regiments of Union troops for service in the state. In 1864, Mar., he ordered elections for state and county officers, and within a few weeks civil government was restored in Tennessee.

On the assembly of the republican national convention, Baltimore 1864, June 6, and the renomination of Abraham Lincoln for pres., it was deemed expedient to nominate for vice-pres. either a conspicuous war democrat or a Southern Unionist of tried loyalty. Daniel S. Dickinson of N. Y. was mentioned as the former and Johnson as the latter, and Johnson was put in nomination as representing both classes. From the moment of his inauguration as vice-pres. he became involved in a bitter controversy with the republican majority in congress. The assassination of President Lincoln made Johnson the chief magistrate of the nation 1865, Apr. 15. Grave concern was felt at the beginning of his administration lest the process of reconstruction should be thwarted or obstructed by a policy of vindictiveness on his part. He retained his predecessor's cabinet, and Apr. 29 issued his first proclamation, removing trade restrictions in most

of the lately rebellious states. His proclamation conflicted with an act of congress and was afterward modified. The proclamation of general amnesty, excepting 14 specified cases of citizens, was issued May 29; the 13th amendment to the constitution became a law with his concurrence 1865, Dec. 18; provisional governments were established in 7 of the southern states by governors of his appointment during the following summer; and the first great breach between Johnson and the dominant party in congress occurred 1866, Feb., when he vetoed the Freedmen's Bureau Bill. This gap was widened Mar. 29 when he vetoed the Civil Rights Bill, which was passed over his veto. The 14th amendment to the constitution was proposed, ratified, and declared in force despite his disapproval, and a second freedmen's bill was passed over his veto in July. About this time Messrs. Denison, Speed, and Harlan resigned from the cabinet, and were succeeded by Messrs Randall, Stanbery, and Browning. The plan of reconstruction adopted by the republican majority in congress was brought forward 1866, June, and was bitterly assailed by the pres. in speeches delivered in the cities and large towns through which he passed while on the way to Chicago to lay the cornerstone of a monument to Stephen A. Douglas Aug. 28. At the next session of congress he used the veto power freely, but without avail; a bill was passed depriving him of the power to proclaim general amnesty; another took from him the command of the army; and 1867, Mar. 2, a bill embodying the congressional plan of reconstruction was passed, vetoed, and passed over his veto, and the celebrated Tenure-of-office Bill was passed over his veto. The first of the events leading directly to his impeachment occurred 1867, Aug. 12, when he removed Edwin M. Stanton, secretary of war, from his office on his refusal to resign, and appointed Gen. Grant in his stead. On the 20th he disregarded the act of Jan. previous, and proclaimed the insurrection at an end and the restoration of civil authority in all the states; and Sep. 7 proclaimed an amnesty that relieved nearly every participant in the rebellion, on the condition of taking an oath to support the constitution and laws. When congress assembled 1867, Dec., it refused to confirm Secretary Stanton's removal, whereupon Gen. Grant resigned, and Mr. Stanton resumed the war office. 1868, Feb. 21, the president again attempted to remove Secretary Stanton, and to replace him with Adj.Gen. Lorenzo Thomas, but the secretary refused to vacate his office, and was sustained in so doing by the senate. Three days afterward the house of representatives voted to impeach the president for high crimes and misdemeanors by a vote of 126 to 47, with 17 not voting; Mar. 5 the house presented to the senate 11 articles of impeachment; and Mar. 23 the senate began the trial. May 16 the senate voted on the article charging him with contempt of congress and ob-

structing the execution of its acts, and on the 26th on that charging a violation of the Tenure-of-office Act in the removal of Sec. Stanton, and in each case the vote was 35 guilty to 19 not guilty, one vote less than the two-thirds required to convict. A verdict of acquittal was entered, and the senate adjourned as a court *sine die.*

In 1868, July, Johnson sought a renomination by the democratic national convention but was unsuccessful, and virtually closed his administration Dec. 25 by proclaiming full pardon to everybody who had engaged in the rebellion. In 1870 he was an unsuccessful candidate for U. S. senator from Tenn.; 1872 unsuccessful candidate for congressman-at-large; and 1875, Jan. was elected U. S. senator, and took his seat at the extra session of that year. With the exception of a bitter attack on Gen. Grant, his subsequent speeches, were temperate. His widow survived him 6 months. Consult: Dunning, *Essays on the Civil War and Reconstruction* (1898); and Dewitt, The *Impeachment and Trial of Andrew Johnson* (1903), a spirited defense.

JOHNSON, Bradley Tyler, American lawyer; b. Frederick, Md., 1829, Sept. 29; d. 1903, Oct. 5. He was graduated from Princeton in 1849, studied law at Harvard in 1850–1, entered practice at Frederick in 1851, became in that year State's attorney for Frederick County, was a delegate to the National Democratic Convention at Charleston and Baltimore in 1860, withdrew from the convention and supported the Breckenridge and Lane ticket. At his own expense he organized a company for the Confederate service, in which he rose to be brigadier-general of cavalry (1864). Subsequent to the war he practiced law at Richmond in 1865–79, at Baltimore in 1879–90; and was a member of the State senate of Virginia in 1875–90. His works include: *Reports of Chase's Decisions* (1875); *Memoir of J. E. Johnston* (1891); a *Life of General Washington;* etc.

JOHNSON, Bushrod Rust, American soldier: b. Belmont County, Ohio, 1817, Oct. 7; d. Brighton, Ill., 1880, Sept. 11. He was graduated at West Point in 1840. He saw service in the Florida and Mexican wars, resigning his commission in 1847 to become professor in the Western Military Institution of Kentucky, at Georgetown. He entered the Confederate army as a brigadier-general at the commencement of the Civil War, and in 1864 became a major-general. He commanded a division under General Lee till the surrender at Appomattox. He subsequently became superintendent of the Military College in the University of Nashville, and chancellor of that institution.

JOHNSON, Cave, American politician: b. Robertson County, Tenn., 1793, Jan. 11; d. Clarksville, Tenn., 1866, Nov. 23. Admitted to the bar, he practised at Clarksville, in 1820 became a judge of the State circuit court,

and was a Democratic representative in Congress in 1829–37 and again in 1839–45. In 1845 he was appointed postmaster-general, from which post he retired at the close of Polk's administration (1849). He was president of the Tennessee State bank in 1850–9, and was elected to the State senate as a Unionist in 1863, although unable to serve because of ill-health.

JOHNSON, Clifton, American author and illustrator: b. Hadley, Mass., 1865, Jan. 25. He obtained a secondary education, worked on a farm, was clerk in a bookshop and school-teacher, studied in the New York art-schools, published in 1892 *The New England Country*, an illustrated study of farm-folk, and later was much abroad obtaining notes and pictures for works on foreign life. Other volumes of which he is author and illustrator are: *The Country School* (1893); *The Farmer's Boy* (1894); *What They Say in New England* (1896); *Among English Hedge Rows* (1899); *Along French Byways* (1900); *New England and Its Neighbors* (1902); *The Land of Heather* (1903); *Old-Time Schools and School-Books* (1904); *Highways and Byways of the South* (1904); etc.

JOHNSON, David, American painter: b. New York 1827, May; d. Walden, N. Y., 1908, Jan. 30. He was self-taught, excepting for the few lessons he received from Jasper F. Cropsey, and chose American landscape as his specialty. Among his works are: *Echo Lake* (1869); *Lake George* (1876); *Greenwood Lake* (1878).

JOHNSON, E. Pauline, Canadian poetess: b. Chiefwood, Ont., 1862; the daughter of George Johnson, head chief of the Mohawk Indians, and of his English wife. She has written several striking poems on Indian subjects and has given public recitals from her works. *The White Wampum* appeared in 1894.

JOHNSON, Eastman: painter; b. Lovell, Me., 1824, July 29; d. New York City 1906, April 5. He began drawing crayon portraits when 18 years old; spent the year 1845 in Washington and made portraits of many representative men, including Daniel Webster and John Quincy Adams; had a studio in Boston 1846–49, and numbered Longfellow and his family, Emerson, Hawthorne, and Sumner among his patrons; studied painting at the Royal Acad. at Düsseldorf 1849–50, and at the Hague 1851–55; established a studio in Paris 1856; and was soon afterward obliged to return to the United States. After spending two summers among the Indians on Lake Superior and two winters in Washington, he settled permanently in New York 1858; after 1860, when he was elected an academician, he contributed to the annual exhibitions of the National Acad. of Design. He attained high distinction both as portrait and genre painter. His notable paintings include *The Savoyard* and *The Card-players* (painted while at the Hague); *The*

*Old Kentucky Home; Milton Dictating to his Daughters; The Old Stage-coach; What the Shell Says; Bo-Peep; Old Whalers of Nantucket; The Drummer-boy; The Pension-claim Agent; The Kitchen at Mt. Vernon; Prisoners of State; Fiddling his Way; The Boyhood of Lincoln;* and *The Barefoot Boy.*

JOHNSON, Edward, American soldier: b. Chesterfield County, Vt., 1816, April 16; d. Richmond, Va., 1873, Feb. 22. Graduated from the United States Military Academy in 1838, he fought in the Florida wars, for his services in which he was brevetted captain, and subsequently in the Mexican War, being brevetted major for his conduct at Chapultepec. He received his captain's commission in 1851, but in 1861 resigned to enter the army of the Confederate States as colonel of the 12th Georgia volunteers. He was promoted brigadier-general in 1862 and major-general in 1863. At Gettysburg he commanded a division. He was captured with his entire force at Spottsylvania 1864, May 12, and retaken in the following December. Subsequent to the war he was a farmer in Chesterfield County, Va.

JOHN'SON, Edward: 1599–1672, Apr. 23; b. Herne Hill, Kent, England; legislator. He is believed to have accompanied John Winthrop's expedition to New England 1630. In 1642 he aided in establishing the town and church of Woburn, Mass., represented it in the general court 1643–71 with the exception of one year, was its recorder from 1642 till his death, and was speaker of the Mass. house of representatives 1655. He was author of *Wonder-working Providence of Zion's Saviour in New England* (London 1654), a history of the country 1628–52, reprinted with notes by the Mass. Hist. Soc. 1867.

JOHNSON, Franklin, American Baptist clergyman and scholar: b. Frankfort, Ohio, 1836, Nov. 2 He was graduated from the Colgate Theological Seminary (Hamilton, N. Y.), in 1861, held pastorates in Michigan, New Jersey, and at Cambridge, Mass., in 1862–88, was co-editor of *The Watchman* in 1876, and in 1890–2 president of Ottawa University. In 1892 he was appointed professor of history and homiletics in the University of Chicago. Among his writings, besides translations and an annotated edition of St. Matthew, are: *Moses and Israel; Heroes and Judges from the Lawgiver to the King; The New Psychic Studies in their Relation to Christian Thought; The Home Missionaries* (1899); *The Christian's Relation to Evolution* (1904).

JOHNSON, Helen Kendrick, American author: b. Hamilton, N. Y., 1843, Jan. 4. She was the daughter of A. C. Kendrick (q.v.) and was married to Rossiter Johnson (q.v.) in 1869. Beside editing several compilations of verse she has published *The Roddy Books*, popular juvenile tales (1874–6); *Our Familiar Songs* (1881); *Raleigh Westgate* (1889); *Woman and the Republic*

(1897). She has been an active member of the Association Opposed to the Extension of Suffrage to Women.

JOHN'SON, Herrick, d.d., ll.d.: theologian: b. near Fonda, N. Y., 1832, Sep. 21. He graduated at Hamilton College 1857, and at Auburn Theol. Seminary 1860; was pastor of Presb. churches in Troy, Pittsburg, Philadelphia and Chicago; was chosen prof. of homiletics and pastoral theology in Auburn Theol. Seminary 1874, lecturer on sacred rhetoric in the Theol. Seminary of the N. W. 1880, and prof. of sacred rhetoric and pastoral theology in the latter institution 1883; and was moderator of the gen. assembly of the Presb. Church at Springfield, Ill., 1882. He is one of the board of trustees of Lake Forest Univ., and of the Presb. church board of aid for colleges; has published *Christianity's Challenge* (Chicago 1882); *Plain Talks about the Theatre* (1883); *Revivals, their Place and Power* (1883); *From Love to Praise* (1903), etc. He received the degree d.d. from Western Reserve College 1867. He is vigorous and direct in his onslaught on various forms of public and social evil.

JOHN'SON, Herschel Vespasian: 1812, Sep. 18—1880, Aug. 16; b. Burke co., Ga.: lawyer. He graduated at the Univ. of Ga. 1834; was admitted to the bar and began practicing at Augusta; removed to Milledgeville and was a democratic presidential elector 1844; was appointed U. S. senator to fill a vacancy 1848; elected judge of the superior court in his judicial district 1849; held the office till his election as governor of Georgia 1853; re-elected governor 1855; democratic candidate for vice-pres. of the United States on the ticket with Stephen A. Douglas 1860; opposed the secession of Georgia 1861; was a member of the Confederate senate 1863–4; president of the Georgia constitutional convention 1865; elected U. S. senator but denied a seat 1866; and re-elected judge for 8 years 1873.

JOHN'SON, Horace Chauncey, American artist: b. Oxford, Conn., 1820, Feb. 1. He was a pupil of A. H. Emmons at Hartford, and of the antique school of the National Academy, New York; studied also in Rome (1856–8); established his studio in Italy, and later at Waterbury, Conn. His works include: *Roman Peasants on the Campagna; Grape Gatherers of Gensano; Italian Kitchen; Azrael;* etc.

JOHNSON, Sir John, American colonial soldier: b. near Johnstown, N. Y., 1742, Nov. 5; d. Montreal, 1830, Jan 4. He was the son of Sir William Johnson (q.v.), was knighted in 1765 and succeeded to his father's estates and baronetcy in the Mohawk Valley in 1774. When the Revolution came on he escaped to Canada in 1776 with 700 loyalists. He organized the corps known as the Queen's Own American Regiment, of which he was commissioned colonel. In July 1777, he took part

in the siege of Fort Stanwix (q.v.). He defeated General Herkimer in the latter's brilliant attempt to cause the besiegers to abandon their operations; but was himself subsequently defeated. During the next two years he continued active in northern and central New York, and the Indian massacres of Cherry Valley and Wyoming formed some of the most painful incidents of the war. He was, however, crushingly defeated at Newton 1779, Aug. 29, and retired to Montreal. His influence over the Indians had always been remarkable and the British government appointed him superintendent-general of Indian affairs in British North America, besides making him extensive land grants, to replace the Mohawk family estates which had been confiscated.

JOHN'SON, John Butler, American engineer and educator: b. Marlboro, O., 1850, June 11; d. Pier Cove, Lake Michigan, 1902, June 20. He was graduated at the Univ. of Michigan, 1878; was engineer on the U. S. Lake Survey and Mississippi River Survey till 1883; and from 1883–98 was professor of civil engineering at Washington Univ., St. Louis, Mo. He assumed direction of the testing of timber for the U. S. Forestry Bureau in 1891 and from 1884 conducted the index department of *The Journal of the Assoeiation of Engineering Soeieties.* He subsequently became dean of the Department of Mechanics and Engineering at the Univ. of Wisconsin. He published *Theory and Praetiee of Surveying* (1886); *Engineering Contracts and Specifications* (1895); and (with others) *Modern Framed Structures* (1893).

JOHN'SON, Oliver: 1809, Dec. 27—1389, Dec. 10; b. Peacham, Vt.: editor. He was apprenticed to a printer in the office of the Montpelier *Watchman;* and 1831, Jan. 1, became editor of the newly-established *Christian Soldier.* From this time till 1865 he was among the foremost workers in the anti-slavery cause, and as editor, newspaper contributor, and lecturer rendered effective service. In 1865–70 he was managing editor of *The Independent,* 1870–72 editor of the weekly edition of the New York *Tribune,* and 1872 office editor of *The Christian Union.* He was a founder of the New England Anti-Slavery Soc., published *William Lloyd Garrison and his Times, or Sketches of the Anti-Slavery Movement in America* (Boston 1880), and till his death was a frequent contributor to the New York *Tribune* and other publications.

JOHN'SON, Reverdy: 1796, May 21—1876, Feb. 9; b. Annapolis, Md.: lawyer. He received a collegiate education; was admitted to the bar 1815; appointed deputy attorney-general of the state; removed to Baltimore 1817; elected state senator 1821 and 25; resigned to attend to his practice 1827; reported the decisions of the Maryland court of appeals in conjunction with Thomas Harris 1820–27; elected U. S. senator 1845: resigned to

become U. S. attor.-gen. in President Taylor's cabinet 1849; resumed law practice on Pres. Fillmore's accession; member of the peace convention at Washington 1861; elected U. S. senator 1862 and served with distinction 1863–68; appointed by Pres. Johnson U. S. minister to England 1868, June; negotiated the Johnson-Clarendon treaty for the settlement of the *Alabama* claims, which was rejected by the U. S. senate; recalled and resumed practice 1869; supported Horace Greeley for pres. 1872; and continued in active practice till his death.

JOHN'SON, Richard Mentor: 1781, Oct. 17—1850, Nov. 19; b. Bryant's Station, Ky.: lawyer. He was educated at Transylvania Univ., Ky.; was admitted to the bar and began practicing at Great Crossings, Ky.; was elected a member of the legislature 1804, and a representative in congress as a 'republican' 1807; served in the latter body till 1819, Mar. 3, excepting two brief periods when he was in command of a regt. of Ky. mounted riflemen in the early part of the war of 1812; was U. S. senator 1819–29 and representative 1829–37; was candidate for vice-pres. of the United States on the ticket with Martin Van Buren 1836, and received 147 electoral votes, and on the election being thrown into the U. S. senate was there chosen vice-pres. 1837, Mar.; and after retiring from this office was again elected a member of the legislature. He was author of the law abolishing imprisonment for debt in Ky. In the battle of the Thames, 1813, in which Johnson was badly wounded, he was reported to have killed the great chief Tecumseh.

JOHN'SON, Richard W.: soldier: b. Smithland, Ky., 1827, Feb. 7; d. St. Paul, Minn., 1897, April 21. He graduated at the U. S. Milit. Acad. 1849; served in the infantry till 1855; was transferred to the cavalry as 1st lieutenant; promoted captain 1857, major 1862; appointed brigadier-general of volunteers 1861, Oct.; served at Pittsburg Landing, Tenn., in Alabama, Tennessee, and Kentucky, the siege of Corinth, and in command of a division of infantry at Stone River, Liberty Gap, Chickamauga, Missionary Ridge, and the battles on the line of march from Nashville to New Hope Church, Ga.; was taken prisoner at Gallatin, Tenn., 1862, Aug. 21, and exchanged Dec.; commanded the 12th division Army of the Cumberland; was wounded near Atlanta 1864, May 28; commanded a division of cavalry at the battle of Nashville; was brevetted brigadier-general and major-general U. S. A. 1865, Mar. 13, and retired 1867, Oct. 12. In 1868–9 he was military professor in the University of Missouri, 1869–70 in the University of Minnesota, and 1881 was democratic nominee for governor of Minnesota. He published *Life of Gen. George H. Thomas* (1881), and *A Soldier's Reminiscences* (1886).

JOHN'SON, Robert Underwood, American editor and poet; b. Washington, D. C., 1853, Jan. 12. He became

associate editor of the *Century Magazine* in 1881. His efforts as secretary of the American Copyright League in behalf of the establishment of international copyright greatly aided in obtaining the law of 1891. He edited, with C. C. Buel, the notable *Battles and Leaders of the Civil War* (1887–8), and has published three volumes of verse: *The Winter Hour and Other Poems* (1891); *Songs of Liberty and Other Poems* (1897); and *Poems* (1902).

JOHN'SON, Rossiter, editor and author: b. Rochester, N. Y., 1840, Jan. 27. He was graduated at Rochester University, 1863, PH.D., LL.D., and began his career on the staff of the Rochester *Democrat*, a Republican paper, retaining that place from 1864 to 1868. In 1869–72 he was editor of the Concord (N. H.) *Statesman*, when he removed to New York and became associate editor of the *American Cyclopædia*. In 1886–88 he was managing editor of the *Cyclopædia of American Biography;* in 1892–4 he was an editor of the *Standard Dictionary;* and he was sole editor of the *Annual Cyclopædia* from 1883 to 1902. Meanwhile he edited *Works of the British Poets* (3 vols.), *Famous Single and Fugitive Poems, The Authorized History of the Columbian Exposition* (4 vols.), *The World's Great Books* (40 vols.), *Great Events by Famous Historians* (20 vols.), *Biographical Dictionary of Notable Americans* (10 vols.), and *The Literature of Italy* (16 vols.). In 1900 he became editor of *The Universal Cyclopædia*. He was the originator and editor of the series of *Little Classics* (18 vols.), and he devised and edited *Liber Scriptorum*, the first book of the Authors Club. He has been successively Secretary, Chairman and Treasurer of the Authors Club, and President of the Delta Upsilon fraternity, the New York Association of Phi Beta Kappa, the Society of the Genesee, the Quill Club, and since 1898 of the University Extension Society. He is a popular lecturer on subjects of American history, and as a writer he has a clear, forcible and pleasing style. His original works are the following: *Phæton Rogers*, a novel of boy life (1881); *A History of the French War, Ending in the Conquest of Canada* (1882); *A History of the War Between the United States and Great Britain, 1812–1815* (1882); *Idler and Poet* (poems) (1883); *A History of the War of Secession* (1888); *The End of a Rainbow*, an American story (1892); *Campfire and Battlefield* (1894); *The Turning-Points of the Civil War* (1894); *A Short History of the War Between the United States and Spain* (1899); *The Hero of Manila* (1899); *Morning Lights and Evening Shadows* (poems) (1902); *The Alphabet of Rhetoric* (1903); *The Story of the Constitution of the United States* (1906). He wrote the chapter on the Battle of Gettysburg for a new edition of *Creasy's Decisive Battles of the World* (1898); and contributed *The Whispering Gallery*, a series of colloquial essays, to the *Overland Monthly* in 1898–9.

JOHN'SON, SAMUEL, D.D.: 1696, Oct. 14—1772, Jan. 6; b. Guilford, Conn.: educator. He graduated at Yale College 1714; was ordained pastor of the Congl. Church at West Haven, Conn.: 1720, Mar.; went to London 1722, Nov. 5, and took orders in the Church of England; and as missionary of the Soc. for the Propagation of the Gospel in Foreign Parts at Stratford, was for many years the only Episc. clergyman in the Conn. colony. He engaged in a defense of episcopacy, had long controversies with the Revs. Jonathan Dickinson, Thomas Foxcroft, and John Graham, and became the first pres. of King's (now Columbia) College, New York, 1754, holding the office till 1763. He published a large number of theological and educational works, and received the degree D.D. from Oxford Univ. 1743.

JOHN'SON, SAMUEL, LL.D.: 1709, Sep. 18—1784, Dec. 13; b. Lichfield, England; son of Michael J., a bookseller. He received his early education in his native town, from a man named Hunter; of whom he has recorded that 'he beat me very well'—adding, 'without that I should have done nothing.' In 1728, he went to Pembroke College, Oxford, having been engaged for the two previous years in desultory reading, or in what he terms idleness. The *Short Account of Lichfield*, 1819, says that books of his binding are still extant in that city. At Oxford, J. spent probably the most unhappy period of his unhappy life. Overpowered by debts, difficulties, and religious doubts, he became a prey to the morbid melancholy of his constitution. Poverty prevented him from taking his degree. In 1731, his father died insolvent. In the same year he went to Bosworth as usher of a school. Finding the drudgery of this situation unbearable, he soon gave it up, gaining a meagre livelihood by working for booksellers in Birmingham. In 1736, he married Mrs. Porter, a widow: she brought him £800. He then started a school, which having no success, he repaired (1737) to London in the company of his celebrated pupil, David Garrick. Here he formed a connection with Cave, editor of the *Gentleman's Magazine*, to which periodical he became a contributor. In the following year he published *London*, a poem in imitation of the Third Satire of Juvenal, which was very favorably received, Pope, in particular, being warm in its praise. But for many years J. was miserably remunerated for his work, and had great difficulty in keeping the wolf of hunger from his door. Little is known respecting J.'s life from this period till he had passed 50 years of age. We may form, however, some guess of the measure of its unhappiness, when we consider the character and constitution of the man, and what was the position of the majority of men of letters at that time —for literature, 'a dark night between two sunny days'— when the day of patrician patronage was at its close, and that of public patronage had not yet dawned. After 1740, he began to 'report' (if we may be allowed to misuse this word) the parliamentary debates for Cave's Magazine. These 'debates' were drawn up by J. himself, after he

had ascertained the order in which the different speakers rose, and the drift of their arguments. One can readily believe that statesmen were surprised at the splendor and pomp of their own eloquence when they saw it in print. In 1744, J. published his interesting *Life of Richard Savage;* in 1749, his best poem, *The Vanity of Human Wishes*, imitation of the Tenth Satire of Juvenal; and in 1750 commenced *The Rambler*, a periodical which he conducted two years, and the contents of which were almost wholly his own composition. In 1752, the death of J.'s wife left him almost broken-hearted. His affection for her was pathetic. She was old and querulous, and not intellectually gifted; but to procure luxuries for her he denied himself comforts and engaged in drudgery, and he valued her judgment of his writings more than that of the public. Without child or near kindred, he concentrated on her his affection. Three years after her death, his *Dictionary*, a noble piece of work, entitling its author to being considered the founder of English lexicography, appeared, after eight years of solid labor. *The Idler*, another periodical, was begun by J. 1758, and carried on for two years also; and in 1759 occurred one of the most touching episodes of his life—the writing of *Rasselas* to pay the expenses of his mother's funeral. It was written, he tells us, 'in the evenings of a week.' At last he emerged from obscurity. In 1762, a pension of £300 a year was conferred on him by Lord Bute; and in the following year occurred an event, apparently of little moment, but which has had a lasting influence upon his fame: this was his introduction to James Boswell, whose *Life of Dr. Johnson* is probably more imperishable than any of the doctor's own writings. In 1764, the famous Literary Club was instituted, and the following year began Dr. J.'s intimacy with the Thrales. In the same year appeared his edition of Shakespeare. In 1773, he visited the Highlands with Boswell. In 1781, appeared his *Lives of the Poets*, his last literary work of any importance. He was buried in Westminster Abbey, close by the grave of Garrick.

A forceful mind, a certain sage solemnity in the treatment of moral themes, a sharp eye for the observation of character as it manifests itself in society, and a great power of caustic wit, are the chief qualities noticeable in Johnson. He had little aptitude for abstract thinking, and no great vigor of imagination—hence he was neither a philosopher nor a poet; but he had good sense, a solid judgment, and a serious thoughtful nature—hence we find scattered through his numerous works a multitude of valuable remarks on books and men and manners. Dr. J.'s written style is very sonorous, inflated, and antithetic; the language is frequently grander than the thought, and sometimes turgid even to absurdity; but his conversational style, as reported by Boswell, is terse, robust, and felicitous. Indeed as a conversationist his talents were of the highest order. His weighty and pointed sentences fell from his lips in a form fit to pass instantly into print. For years he was the centre of a coteric of men of learning and

talent who were drawn and held by the charm of his brilliant and fascinating talk. (See BOSWELL, JAMES.) Consult: Boswell, *Life of Johnson* ed. by Hill (1887); Hill, *Dr. Johnson, his Friends and his Critics* (1878); *Lives* by Stephen (1878); Grant (1887).

JOHNSON, SAMUEL, American preacher and author: b. Salem, Mass., 1822, Oct. 10; d. North Andover, 1882, Feb. 19. He was graduated from Harvard in 1842, and from the Harvard Divinity School in 1846. He joined no religious denomination, and save for one year with a Unitarian church in Dorchester, was not settled as a minister until 1853, when he established in Lynn, Mass., an independent society, with which he remained till 1870, then withdrew to complete studies of many years, the results of which appeared later in his publications. With Samuel Longfellow (q.v.) he compiled a *Book of Hymns* (1846) and *Hymns of the Spirit* (1864). His critical study *The Worship of Jesus* (1868), written in accordance with his views of universal religion, is described by O. B. Frothingham as 'perhaps the most penetrating and uplifting essay on that subject in any language.' He printed notable essays on religion, reform, etc., in *The Radical* and other periodicals. His great work *Oriental Religions*, including *India* (1872), *China* (1877), and *Persia* (1885)—the last containing an introduction and a critical estimate of Johnson by O. B. Frothingham—represents what Johnson himself calls his 'purely humanistic point of view.' His philosophy was highly transcendental; but being versed in many languages, he was acquainted with all schools, and with the results of history, literature, science, and criticism in every department. His *Theodore Parker* (1890) is a profoundly spiritual interpretation of that preacher and reformer, whose work on the intellectual side was surpassed by Johnson's, while on the moral side, as in the anti-slavery conflict, they stood as equal comrades. A little volume of Johnson's hymns, with other poems, was published in 1899. Consult Longfellow, *Lectures, Essays, and Sermons by Samuel Johnson, with a Memoir.* This volume contains some of Johnson's best papers, including brilliant lectures on *Switzerland* and *Florence*, the outgrowth of searching observations in Europe, *Equal Opportunity for Woman, Labor Parties and Labor Reform* and an illuminative essay on *Transcendentalism.*

JOHNSON, SAMUEL FROST, American painter: b. New York 1835. He received his art education in New York, Düsseldorf, Antwerp, and Paris, in which last place he was a pupil at the Ecole des Beaux Arts. He afterward went to Ecouen and worked under the direction of Edouard Frère, the celebrated painter of children. He produces genre, still life and portraits. Among his genre subjects may be mentioned *Caught at It; Study of an Interior; Roasted Chestnuts; Good Night;* and *A Thirsty Party.*

JOHNSON, Samuel William, American chemist: b. Kingsboro, N. Y., 1830, July 3. He studied at Yale Scientific School and the Universities of Leipsic and Munich. In 1856 he became professor of analytical and agricultural chemistry in the Sheffield Scientific School of Yale and since 1896 professor emeritus. He has published *Essays on Peat Muck and Commercial Manures* (1859); *How Crops Feed* (1870); etc.

JOHNSON, Thomas, American statesman: b. St. Leonard's, Md., 1732; d. 1819. He studied law at Annapolis, was elected to the first Continental Congress (1774), was again sent to Congress in 1776, and in the latter year became brigadier-general of Maryland militia. In 1777 he was chosen governor of Maryland, remaining in office until the close of 1779. In 1780 he entered the provincial congress and the house of delegates, in 1781–7 was in the Continental Congress, in 1791 became an associate justice of the United States Supreme Court, and later declined the office of chief justice.

JOHNSON, Tom Loftin, American capitalist and politician: b. Georgetown, Ky., 1854, July 18. He was clerk in a street railway office (1869–75), and invented several street railway devices; became owner of a street railway in Indianapolis and later acquired large interests in Cleveland and other cities; he was also interested in the iron manufacture in Cleveland. He has been prominent in politics as a member of the Democratic party, and is known as the advocate of the single tax (q.v.), and public ownership of public utilities. Though opposed to the free coinage of silver, he supported Bryan in 1896 and 1900, and the State convention which he controlled unanimously endorsed the Kansas City platform. He was a member of Congress from 1891–5. In 1901 he was elected mayor of Cleveland, and was re-elected in 1903, 1905, and 1907. In this position he has been an advocate of three cent street railway fares. In the fall of 1903 he was Democratic candidate for governor of Ohio, but was defeated by a large plurality.

JOHNSON, Virginia Wales, American novelist: b. Brooklyn, N. Y. 1849, Dec. 28. Since 1875 she has lived in Florence, Italy. Her publications include: *Kettle Club Series* (1870); *Travels of an American Owl* (1870); *Joseph the Jew* (1873); *A Sack of Gold* (1874); *The Catskill Fairies* (1875); *The Calderwood Secret* (1875); *A Foreign Marriage* (1880); *The Neptune Vase*, her finest work (1881; *The Fainalls of Tipton* (1885); *Tulip Place* (1886); *Miss Naney's Pilgrimage* (1877; *The House of the Musician* (1887); *Two Old Cats; The World's Shrine* (1902); and other fictions and several descriptive works, such as *Genoa, the Superb; The Lily of the Arno; Lake Como.*

JOHNSON, Walter Rogers, American chemist: b. Leominster, Mass., 1794, June 21; d. Washington, D. C., 1852, April 26. He was graduated from Harvard in 1818, taught for many years in Framingham, and Salem, Mass., and in Philadelphia, and was professor of physics in the University of Pennsylvania 1839–43. He was the first secretary of the Association for the Advancement of Science, and published *Use of Anthracite* (1841); *Report on Coals* (1844); *Coal Trade of British America* (1850); etc.

JOHN'SON, Sir William: 1715–1774, July 11; b. Smithtown, Ireland: soldier. He came to America to take charge of the property of his uncle Admiral Sir Peter Warren on the Mohawk river, N. Y., 1738; learned the language of the Mohawk Indians, and became a chief; was appointed col. of the Six Nations 1744, and commissary of N. Y. for Indian affairs 1746; made commander of the New York colonial forces for the defense of the frontier 1748; became a member of the governor's council 1750; commissioned sole superintendent of the affairs of the Six Nations and their allies, major-general, and commander-in-chief of the provincial forces for the expedition against Crown Point 1755; defeated Baron Dieskau (q.v.) at Lake George (q.v.) 1755, Sep.; and was voted £5,000 by the British parliament and created a baronet for his victory. Subsequently he took part in the expeditions for the relief of Oswego and Fort William Henry, was at Ticonderoga and Fort Niagara, and succeeding to the command of the latter prosecuted the siege, defeated a French relief force, and compelled the surrender of the fort. He was granted by the king 100,000 acres of land n. of the Mohawk, and concluded the Indian treaty of Fort Stanwix 1768.—His son, Sir John Johnson, 1742–1830, became a col. in the British army in America, and supt.-gen. of Indian affairs in British N. America. His milit. career was not as successful as his father's. His estate was confiscated by the N. Y. act of attainder, and he spent his last days in Canada.

JOHNSON, William Henry, American historical novelist: b. Beaufort, S. C. 1845, March 29; d. 1907. He studied for the Episcopal ministry in the Theological Seminary of Virginia, served in the Confederate army during the Civil War, and in 1872 took orders in the Episcopal Church. In 1886 he withdrew from the Episcopal Church to enter the Unitarian, and was pastor for several years of a Unitarian church at Wilmington, Del. He has published *The King's Henchman* (1898); *King or Knave: Which Wins* (1899); *The World's Discoverers* (1900); *Pioneer Spaniards in North America* (1903); etc.

JOHN'SON, William Samuel, D. C. L., LL. D.: lawyer: 1727, Oct. 27—1819, Nov. 14; b. Stratford, Conn.: son

of SAMUEL JOHNSON. He graduated at Yale College 1744; rapidly attained prominence at the bar; was a delegate to the 'stamp-act' congress in N. Y. 1765, and drew up the remonstrances that were sent to the king; went to England as special agent of the gov.'s council 1766; lived in retirement during the revolutionary war; was member of congress 1784–87; chairman of the Conn. delegation to the convention that framed the federal constitution and of the committee that revised the first draft of it; suggested the organization of the senate as a separate body; was the first U. S. senator from Connecticut; and was president of Columbia College 1787–1800. He received the degree D. C. L. from Oxford Univ. 1776, and LL. D. from Yale College 1788.

JOHNSON CITY, Tenn., city in Washington County, on the Southern railroad, 106 miles north of Knoxville. Its elevated location and picturesque mountain scenery make it a favorite summer resort for Southern people. Here is located the mountain branch of the National Soldiers' Home. The manufacturing interests include iron furnaces, rolling mills, machine shops, tanneries and brickmaking plants. The city was settled in 1870 and is governed under a charter of 1897, by a mayor and council elected biennially. Pop. (1910) 8,502.

JOHNSONESE, n. *jŏn-son-ēz′* [from Dr. *Johnson*]: the literary style or language of Dr. Samuel Johnson; a pompous, inflated style, much affecting the use of classical words. JOHNSON'IAN, a. *-sō′nĭ-an*, pertaining to or resembling Dr. Johnson or his style; pompous, inflated. JOHNSON'IANISM, n. *-ĭzm*, a word or idiom peculiar to or characteristic of Dr. Johnson; a style resembling that of Dr. Johnson.

JOHNSON'S ISLAND, Ohio, an island located at the mouth of Sandusky Bay, overlooking Lake Erie, about a mile long and a mile and a half wide. The island was used during the Civil War as a prison for captured Confederates. It was an ideal spot for a prison post. No prisoner was ever known to escape from it. The grounds were enclosed within a fence 12 feet high, with a platform top, upon which sentinels paced to and fro day and night. To the north Lake Erie stretches away for 50 miles; on the east, separated by three miles of water, lies Sandusky, while west and south of the island are broad stretches of Sandusky Bay. The island was used almost exclusively as a prison for officers, the total number confined there from first to last aggregating over 15,000. The first prisoners were taken there in April 1862, and in September 1865 the last of them was sent to Fort Lafayette, and Johnson's Island was abandoned as a prison post.

JOHN'S ST., or SAINT (Geographical). See ST. JOHN.

JOHNS'TON, Albert Sidney: 1803, Feb. 3—1862, Apr. 6; b. Washington, Ky.: soldier. He was graduated at the U. S. Military Academy 1826, and was adjutant in the 2d U. S. infantry till his resignation 1834. In 1836 he joined the Texan army as a private, was promoted to succeed Gen. Felix Houston in chief command, was senior brigadier-general till 1838, when he became secretary of war, and in 1839 after two battles expelled the invading Indians from Texas. After the war he became a planter in Texas, and remained there till the beginning of the Mexican war, when he raised a regiment of Texas volunteers and took the field at the request of Gen. Taylor. He served till the close of the war and was recommended for promotion to brigadier-general but the president ignored him. In 1849 he was appointed paymaster in the army with the rank of major and served in that capacity till 1855, when he was promoted colonel and assigned to command the 2d U. S. cavalry. In this new regiment Robert E. Lee was lieutenant-colonel, and George H. Thomas and William J. Hardee majors. In 1857 he was placed in command of the expedition fitted out to force the Mormons in Utah to respect federal authority, and accomplished his mission amid great hardships and without a collision with the Mormons. For the able discharge of this duty he was brevetted brigadier-general, and retained in command in Utah till 1860, Feb. 29, when he was ordered to command the department of the Pacific. Hearing of the secession of Texas while in California, he resigned his commission in the army 1861, Apr. 9, travelled overland to Richmond, and Sep. 1 was appointed to the command of all the country west of the Atlantic states and north of the Gulf states, with the rank of major-general in the Confederate army. He reached Nashville Sep. 14; occupied and fortified Bowling Green, Ky.; held the Union army in check till 1862, Jan.; had his right flank turned by the defeat of Gen. Crittenden, who against instructions had attacked the Union force under Gen. Thomas, Jan. 19; and determined to risk a general engagement on the Tennessee and Cumberland rivers. On. Feb. 6 he lost Fort Henry to Gen. Grant and Flag-officer Foote, the Confederate troops retiring to Fort Donelson after the surrender. He hoped to defend Nashville at Fort Donelson, and placed Gens. Floyd, Pillow, and Buckner at the fort, while he personally took command at Nashville. Fort Donelson, however, was forced to surrender to Gen. Grant, Feb. 16 (see Donelson, Fort). Johnston then concentrated his remaining force (50,000 men) at Corinth and planned to attack Grant. On Apr. 3 he began his march to Shiloh, hoping to find Grant unprepared, and the great battle began there on the 6th. The Union army was surprised, but in leading the final charge

in the afternoon which crushed the Union left wing, Johnston received a mortal wound. Gen. Beauregard succeeded him, and the Confederate victory of the first day was turned to defeat on the second, when Grant was reinforced.

JOHNSTON, Alexander, American historian: b. Brooklyn, L. I., 1849, April 29; d. Princeton, N. J., 1889, July 21. He was graduated from Rutgers College, N. J., in 1870, studied law and was admitted to the bar in 1876. He did not practice, however, and was professor of jurisprudence and political economy at Princeton University from 1883 till his death. He was the author of *History of American Politics* (1879); *Connecticut: a Study of a Commonwealth Democracy* (1887); *History of the United States for Schools* (1886); and *The United States: its History and Constitution*, reprinted from the *Encyclopædia Britannica* (1887).

JOHNSTON, *jŏn'ston*, Alexander Keith, ll.d., f. r. s.: most distinguished name in British cartography: 1804, Dec. 28—1871, July 10; b. near Edinburgh. The elegance of design that characterizes all his productions, and which, in spite of their utilitarian aim, gives them rank as specimens of fine art, was probably developed during his apprenticeship as an engraver. His first important work was *National Atlas* (fol.) 1843. Its merits received immediate recognition, and Johnston was appointed royal geographer for Scotland. Five years later, appeared his far-famed *Physical Atlas of Natural Phenomena*, (2d ed. 1856) the publication of which was the signal for a shower of honors from the geographical societies of Europe. In 1850, appeared a very useful *Dictionary of Geography*, better known as 'Johnston's Gazetteer' (5th ed. 1877); and in 1861, *Royal Atlas of Geography*, beautiful and minutely accurate. In conjunction with other savants, he published also atlases of Astronomy and Geology; besides many educational atlases, physical, general, and classical. In 1865, Edinburgh Univ. conferred on him the degree ll. d.

JOHNSTON, Gabriel, American colonial governor of North Carolina: b. Scotland 1699; d. 1752. Very little is known of his personal history. He was educated at the University of St. Andrew's, with a view to the medical profession, which he seems not to have practiced. He was for a while professor of Oriental languages at St. Andrew's, and then removed to London, where he was engaged with Pulteney and Bolingbroke in writing for the *Craftsman*. By the influence of the Earl of Wilmington he was appointed governor of North Carolina, and took the oath of office at Brunswick 1734, Nov. 2. He was the ablest and most successful of all the colonial governors, holding the reins of power up to the time of his death.

JOHNSTON, Sir Harry Hamilton, English traveler: b. London 1858, June 12. He was educated at King's College, London, and the Royal Academy of Arts, travelled in North Africa, 1879–80, and Portuguese West Africa, and the Kongo region, 1882–3. He commanded a scientific expedition to Mount Kilimanjaro in 1884 and has held various consular posts in Africa. He has published *Essays on the Tunisian Question* (1880–1); *The River Congo* (1884); *Kilimanjaro* (1885); *History of a Slave* (1889); *Life of a Livingstone* (1891); *British Central Africa* (1897); *History of the Colonization of Africa by Alien Races* (1899); *The Uganda Protectorate* (1902); *British Mammals* (1903); *The Nile Quest* (1903); etc.

JOHNSTON, Henry Phelps, American historical writer: b. 1842. He is professor of history in the College of the City of New York, and has published *The Battle of Harlem Heights; Loyalist History of the Revolution; The Yorktown Campaign; The Storming of Stony Point on the Hudson July* 15, 1779; *Nathan Hale* (1901); etc.

JOHN'STON, James F. W.: 1796–1855, Sep. 18; b. Paisley: agricultural chemist. He was of humble parentage and was mostly self-educated. In 1825, he removed to Dunham, where he opened a school, which he continued till 1830, when, having married a lady of considerable fortune, he applied himself to chemistry. He went to Stockholm and became pupil of Berzelius. After his return from the continent, he resided in Edinburgh as chemist to the Agricultural Soc.; but later made his permanent residence at Durham. His *Catechism of Agricultural Chemistry and Geology* has gone through more than 50 editions, and has been translated into almost every European language; and his *Lectures on Agricultural Chemistry and Geology* are held in high esteem. The last of his works was his *Chemistry of Common Life*, which originally appeared in *Blackwood's Magazine*, and has gone through several editions.

JOHNSTON, James Steptoe, American Protestant Episcopal bishop: b. Church Hill, Miss., 1843, June 9. He was educated at the University of Virginia, served as 2d lieutenant in the Confederate cavalry during the Civil War, subsequently studied law and was admitted to the bar. After practicing for a short time he took orders in the Episcopal Church in 1869 and after holding rectorships at Port Gibson, Miss., six years; Mount Sterling, Ky., four years; and Mobile, Ala., eight years, became bishop of Western Texas in 1888, January.

JOHNSTON, John, American Indian agent: b. Ballyshannon, Ireland, 1775, March; d. Washington, D. C., 1861, April 19. He came to Cumberland County, Pa.,

in 1786, obtained a post in the War Department in 1792, went to the Ohio Valley, later became a United States factor at Fort Wayne, Ind., and at the beginning of the War of 1812 was appointed Indian agent for Ohio, with headquarters at Piqua. President Harrison appointed him agent to the Senecas, with headquarters at Upper Sandusky, and in that capacity negotiated with the Senecas the treaty whereby they agreed to move westward across the Mississippi. He was president of the Historical and Philosophical Society of Ohio, and wrote: *Present State of the Indian Tribes Inhabiting Ohio*, printed in *Archæologia Americana* (transactions and collections of the American Antiquarian Society), Vol. I. (6 vols., 1820–74).

JOHN'STON, Joseph Eccleston: soldier: b. Cherry Grove, Va., 1807, Feb. 3; d. Washington, D. C., 1891, March 21. He graduated at the U. S. Milit. Acad. 1829; entered the artillery branch of the army; was on frontier duty in the Seminole war in Florida, and on the staff of Gen. Scott till 1837; resigned his commission to follow civil engineering 1837, but re-entered the army as 1st lieutenant of topographical engineers, and was brevetted captain for services in Florida 1838, July 7; was on river improvement, boundary, and survey duty till 1846; took part in all the important battles of the Mexican war; was inspector-general of the Utah expedition 1857; and became quartermaster-general U. S. A. 1860. In 1861 he resigned his commission; was appointed major-general of volunteers in the Confederate Army of Virginia; occupied Harper's Ferry; reinforced Gen. Beauregard at Manasses; took part in the battle of Bull Run; commanded the Confederate army in the Peninsular campaign; and was wounded and succeeded by Gen. Lee at Fair Oaks, 1862, May 31. On his return to service he was promoted lieut.gen., and given command of the southwest department; was unsuccessful in attempts to raise the siege of Vicksburg; succeeded Bragg in command of the Army of the Tennessee; was superseded by Gen. Hood for failing to prevent the invasion of Georgia; attempted to check Gen. Sherman's advance through the Carolinas, but met with several defeats; and surrendered his army to Gen. Sherman at Durham Station, N. C., 1865, Apr. 26. During his military career Johnston was wounded 10 times in battle. He was elected representative in congress from the Richmond district of Virginia 1877, and appointed U. S. railroad commissioner 1885.

JOHNSTON, Mary, American novelist: b. Buchanan, Botetourt County, Va., 1870, Nov. 21. In 1898 she became suddenly famous through her *Prisoners of Hope: a Tale of Colonial Virginia*, and her next book *To Have and to Hold* (1900) was even more popular. She has since published *Audrey* (1902); *Sir Mortimer* (1904).

JOHNSTON, Richard Malcolm, American author: b. Powelton, Ga., 1822, March 8; d. Baltimore, Md., 1898, Sept. 23. He was graduated at Mercer University in 1841; was admitted to the bar in 1843; and began practice in Sparta, Ga., the same year. He was professor of literature in the University of Georgia in 1857–61 and served as colonel in the Confederate service during the Civil War. At its close he established a boys' boarding school at Sparta, which he removed in 1867 to Baltimore, and of which he was the head for many years. His publications include: *Historical Sketch of English Literature; Life of Alexander H. Stephens* (1883); *Dukesborough Tales* (1883); *Old Mark Langston; Ogeechee Cross-Firings* (1889); *Mr. Absalom Billingslea and Other Georgia Folk* (1887); *Studies Literary and Social* (1891–2); *The Primes and Their Neighbors; Mr. Billy Downs and his Likes.*

JOHN'STON, Samuel, ll. d.: 1733, Dec. 15—1816, Aug. 18; b. Dundee, Scotland: lawyer. He accompanied his parents to N. C. in infancy; was educated for the bar; was clerk of the superior court of Chowan co., N. C., 1767–72; member of the assembly 1769; member of the first two provincial congresses and pres. of the third and fourth; chairman provincial council 1775; member of congress 1781–2; gov. of N. C. 1788–9; pres. of the convention that adopted the federal constitution; U. S. senator 1789–93; and judge of the supreme court 1800–03.

JOHNSTON, William Preston, American educator: b. Louisville, Ky., 1831, Jan. 5; d. Lexington, Va., 1899, July 16. He was a son of A. S. Johnston (q.v.) and was graduated at Yale in 1852 and from the Louisville Law School in 1853. He served as colonel and aide-de-camp to Jefferson Davis in the Confederate army during the Civil War, and soon after its close became professor of history and literature at the Washington and Lee University, remaining there till 1877. In 1880 he became president of the Louisiana State University, and after its union with Tulane University, New Orleans, in 1884, was president of that institution till his death. His publications include: *Life of General Albert Sidney Johnston; The Johnstons of Salisbury; The Prototype of Hamlet;* and *Seekers after God* (poem).

JOHNSTOWN: city, cap. of Fulton co., N. Y., on Cayadutta Creek and the Fonda J. and Gloversville railroad; 4 m. n. of Fonda, 40 m. n.w. of Albany. In 1771, a few years after it settlement, it was named after its founder, Sir William Johnson, whose mansion, built here 10 years earlier, still stands almost as it was left by him. In 1808 Johnstown was incorporated as a village, and in 1895 it received a city charter. The courthouse and jail, built by Sir William Johnson in 1772,

occupy with Johnson Hall an interesting place in local history. The city has a public library building which was the gift of Andrew Carnegie. The industries of Johnstown incude a variety of important manufactures, chief among which are those of gloves and mittens, knit goods of different kinds, leather, gelatin, lumber, grist-mill and machine-shop products, etc. The municipal government is well supported by public spirit, and the city's affairs are efficiently managed. The people elect the water board and the school board, and the waterworks are owned and operated by the city. Pop. (1910) 10,447.

JOHNSTOWN: city and county-seat of Cambria co., Penn.; on Conemaugh river at the junction of Stony and Conemaugh Creeks, and the Penn. and the B. and O. railroads; 39 m. s.w. of Altoona, 79 m. e. of Pittsburg; almost totally destroyed with several neighboring villages by a flood caused by the breaking of a dam on S. Fork Creek 1889, May 31. The town was on the s. bank of Conemaugh Creek and the e. bank of Stony Creek, and in the fork between the two. It lay at the bottom of a beautiful valley surrounded by mountains rich in iron, bituminous coal, limestone, cement, and fireclay, was closely built up on the flats, and had numerous dwellings on the mountain slopes. The chief industry was the manufacture of iron, wire, and Bessemer steel by the Cambria Iron and Steel company, which owned one of the most valuable plants in the country, had $5,000,000 invested in the business, gave employment to two-thirds of the people, and owned the greater part of the dwellings. Their works were isolated and extended from Cambria City several miles toward the fatal dam. Besides these works there were a woolen mill, tannery, cement works, various mechanical works, and some minor industries. The town was laid out in broad shaded streets and avenues with pretty patches of grass and flowers, had an attractive park in its centre, 16 churches divided among the Rom. Cath., Presb., Meth., Episc., Bapt., Congl., and Lutheran denominations, a newly-erected brick high-school building, opera house, public library, an acad., Rom. Cath. convent, gas and water works, 1 national bank (cap. $100,000), 1 savings bank, 1 private bank, and 2 daily and 4 weekly newspapers. Johnstown was the site of the Indian village of Kickenopawling, and was settled by a German, Joseph Johns, 1791. The first iron-ore furnace was erected there 1809.

The dam that gave way held back the water of a reservoir formed by an artificial lake on S. Fork Creek, in the mountains, 564 ft. higher than Johnstown. This lake formerly supplied the w. division of the old Penn. canal, extending from it to Pittsburg. A similar reservoir was at Hollidaysburg, e. of the summit of the Alleghanies. Between the two reservoirs was the old Port-

age road, one of the earliest railroads built in the state. When the Penn. railroad was extended through this region, the usefulness of the canal for through traffic was destroyed and the e. division abandoned. Subsequently the railroad company obtained a grant of the canal from the state, the Hollidaysburg reservoir was torn down, and its water gradually escaped into the Juniata river. The S. Fork Creek reservoir was preserved for its picturesque surroundings, the railroad company established the summer resort of Cresson near it, and the place became so popular among fishing and boating parties that a number of prominent business men, chiefly of Pittsburg, were led to organize the South Fork Fishing and Hunting Club and secure the use of the lake from the railroad company. The club then increased the size of the lake to a length of 3 m. and width of 1¼ m., by enlarging the dam till it was more than 100 ft. high, about 1/5 m. long, 20 ft. thick at the top and 90 ft. at the base.

For a few days prior to the catastrophe the region had been visited by heavy rains which greatly increased the body of water in the lake, and renewed the apprehension of danger that had been felt for more than a year by many inhabitants of the valley below it. Several times the dam had been reported unsafe and unable to withstand an increased pressure on it, and a number of leakages through it had been detected from time to time. As the Cambria Iron and Steel company seemed to feel no alarm at the condition of the dam, there was no general heed given either to report or rumors. On the morning of the disaster an alarm was spread through Johnstown that the dam was leaking worse than ever before. Some families that happened to be at home together and parts of others whose male members were away at work fled up the mountain sides. But these were few in comparison with the thousands who at the moment would not or could not seek safety in flight. Suddenly about the middle of the afternoon the piercing polonged shriek of a steam whistle reverberated through the valley, and in a few moments its notes of alarm were stifled by the rushing of a great body of water down the valley, bearing with it a vast confused and whirling mass of timber, whole dwellings and parts of all manner of buildings, and struggling and dead men. women, children, babes in cradles and on shutters and doors, and domestic animals. As the flood wrecked village after village, it seemed to gain fresh momentum. The fury of the waters met its first check at the stone railroad bridge, and there almost in the twinkling of an eye a mass of wreckage arose to a height of 40 ft. above the track. The day express train on the Penn. railroad was swept from its track at E. Conemaugh and submerged, with a loss of 25 passengers, and at the round-house 35 locomotives were lifted entire and depos-

ited in a general wreck a considerable distance away. Early in the evening the debris at the bridge caught fire, and beside the dead bodies entangled in it, many living persons were burned beyond recognition.

As soon as news of the catastrophe could be telegraphed to the outer world, measures of relief were at once instituted. Gov. Beaver appointed Adjt. Gen. Hastings his personal representative to take charge of the work of removing the debris, burying the dead, providing for the living, and disinfecting the locality lest an epidemic of fevers should follow; Clara Barton with a working force of the Red Cross Assoc. hastened to Johnstown to prepare temporary quarters and relief for the survivors; govt. engineers were detailed to assist in blowing up the debris at the bridge; and subscriptions to the relief fund were started all over the country and in Europe. The Flood Relief Commission received to Sep. 14 from all sources $2,605,144, and money continued to be received through the autumn. Of this amount $769,382 were expended in Conemaugh valley and $169,275 in other parts of the state, in clearing the path of the flood and providing for pressing necessities, and Sep. 14 the commission voted to distribute $1,600,000 among the people of Johnstown to partially compensate for losses and enable them to become again self-supporting. 1890, Jan. 16, the Johnstown Flood Relief Commission reported total receipts $2,982,072, disbursements $2,683,747, balance $218,325. The flood left, as far as known, 116 widows and 322 orphans. After careful investigation the committee reported total loss of life 2,500; 1,675 bodies were recovered and identified, 644 recovered and unidentified, 605 persons still missing, from a total of 2,924 known to have disappeared from the valley. It is not probable that an accurate statement can ever be made. A suit was begun against the S. Fork Fishing and Hunting Club, to test the club's responsibility for the disaster. The city was soon rebuilt and its industries re-established. Its situation, in a coal and iron ore region, combined with its great water power, has made it an important manufacturing centre. Fire-clay and limestone are also found in the vicinity. Some of its industrial establishments are the Cambria Steel Company works, where about 10,000 men are employed, the Lorain Steel Company, iron and steel works, iron-plate mills, street-car rail factory, planing-mills, cement works, furniture factories, potteries, breweries, brick-yards, machine-shops, foundries, furnaces, wire works, leather, and woolen goods. Some of the noted public buildings are the Cambria Free Library, the Conemaugh Valley Memorial Hospital, several churches, the Franciscan Monastery, the city hall, and the high school. The number and arrangement of the parks add to the beauty of the place. Pop. (1910) 55,482.

JOHORE, *jō-hōr':* state in the Malay Peninsula. See NEW JOHORE.

JOIN, v. *joyn* [F. *joindre*, to join—from L. *jungĕrĕ*, to yoke, to bind together]: to connect; to couple; to bring into close union; to unite, as in marriage; to return to duty as to join his regiment; to be in contact, as the buildings join. JOIN'ING, imp.: N. the part where united; a joint; a hinge. JOINED, pp. *joynd.* JOIN'ER, n. *-ėr*, one who unites or joins; one who frames or joins timber in the construction of buildings, etc.: see under CARPENTER. JOIN'ERY, n. *-ėr-ĭ*, the art or trade of the joiner; art of joining or framing together the wooden finishing of buildings, such as doors, windows, shutters, and stairs: see CARPENTRY. JOIN'DER, n. *-dėr*, in *OE.*, a joining.—SYN. of 'join': to combine; collide; coalesce; encounter; associate; adhere; add; link; in *OE.*, to close; clash.

JOIN'DER OF PARTIES, in Law: union of two or more persons, having a common interest or liability, in a legal proceding; observed with material differences both in courts of equity and in courts of law; but applicable most frequently to actions growing out of contracts. The rules prevailing in courts of equity are more liberal than those in courts of law; in the law courts a failure to join the proper parties in an action may be fatal to the case in itself. In courts of equity it is generally provided that all parties materially interested in the subject of a suit should be joined however numerous; that where the parties are very numerous, a portion may appear for convenience for all of like interest or liability, that all parties having a common interest in a common contract may join; that two or more members of a corporation having a joint interest may join; that a corporation may join with its individual members to establish an exemption on their behalf; that idiots and lunatics may be joined or separate plaintiffs in suits to set aside acts done by them while under imbecility; that several infants may join in the same bill for an accounting of their joint estate; that all persons interested in the subject-matter of a suit who cannot be made plaintiffs should be made defendants; that officers and agents may be joined for purposes of discovery; and that all heirs should be joined in a bill respecting the testator's real-estate. In courts of law it is provided that on joint or several contracts all parties in interest may sue either jointly or separately, but part cannot join and leave the others to act separately; and on a joint and several contract each party may be sued separately or all together. Executors and administrators must bring action in the joint name of all; partners must all join in suing third parties in partnership transactions; tenants in common should join in an action on joint contract; and trustees must all join in bringing an action.

JOINT, n. *joynt* [F. *joint;* OF. *joinct,* a joint—from *joindre,* to join: L. *junctus,* connected—from *jungĕrĕ,* to join]: the part where two or more things or divisions join; a hinge; a seam; the limb of an animal prepared by the butcher, as a *joint* of mutton; articulation or the joining of two or more bones, as elbow-joint (see JOINTS, in Anat.): knot in a plant: ADJ. shared by two or more; having an interest in the same thing, as *joint* heirs; united; acting in concert: V. to separate into joints, as meat; to form with joints, or in articulations; to fit perfectly. JOINT'ING, imp.: N. the making of a joint. JOINT'ED, pp.: ADJ. separated into joints; formed with joints, as the stem of a plant. JOINT'LY, ad. *-lĭ,* together; not separately. JOINT'RESS, n. *-rĕs,* in *OE.,* a woman who holds anything in jointure. JOINT-STOCK, a common fund or stock formed by the contributions or paid-up shares of different persons (see JOINT-STOCK COMPANY). OUT OF JOINT, slipped from the socket or groove where moving naturally; thrown into confusion or disorder. JOINTS, in *geol.,* the fissures or rents which divide rock-masses into blocks referring the direction of *joints* in stratified rocks to lines of upheaval.

JOINT AND SEV'ERAL: legal phrase denoting the joinder of two or more persons in a transaction where as debtors of equal liability they may be sued together or separately. A joint and several bond is one given by two or more obligors, who bind themselves jointly and severally, that is, collectively and individually, to the obligees. The latter can sue all the obligors jointly, or any one of them separately, for the whole amount, but cannot bring a joint action against a part and individual ones against the others. Where one obligor is sued and payment is awarded, the others are obliged to contribute to him their several proportions of the amount. If one pays the whole amount or more than his individual share, and part of the others are solvent and part insolvent, he can recover from the solvent ones only the share to which they would be liable if all were solvent. In courts of equity, however, the solvent ones must contribute equally to the discharge of the whole indebtedness.

JOINT OWN'ER, in Law: a person who is one of several owners of property. The property may be either personal or real, goods or land. One of the characteristics of this ownership is, that if one of the parties dies, his interest accrues to the others, and does not go to the deceased co-owner's heirs or representatives. Thus, if A and B are joint owners of a horse, and A dies, the horse then belongs entirely to B. So with real property—houses, etc. This is called the doctrine of survivor-ship. Sometimes wills and deeds do not clearly express whether the property was given to A and B as

joint tenants or owners, or as tenants in common. The chief difference between these two descriptions of owners is, that if one tenant in common dies, his share does not go to the other tenants in common, but belongs to his representatives or heirs. Hence, in doubtful cases, a court of equity generally inclines to hold that a tenancy in common was meant rather than a joint tenancy, for the former is the more fair of the two kinds of ownership. In all cases, however, it is in the power of a joint owner to convert his joint tenancy into a tenancy in common, by simply executing a deed of partition or alienation if the property consist of land; or selling his share if it consist of personalty. And there is an exception as to the survivorship in the case of a firm of partners, for in that case, when one partner dies, his share does not accrue to his copartners, but belongs to his own personal representatives: this is said to be an exception to the general rule of joint ownership, created for the benefit of trade.

JOINTS, n. [OF., L. *junctus, jungo,* join]: Joints (in anatomy) refer to articulations or unions of any two parts of the skeleton. The bones which form most of the joints are capped with cartilage and the structures are held in place by ligaments of fibrous connective tissue. Between the bones of movable joints there is a synovial sac which contains a small amount of viscid lubricating fluid. Joints may be divided into two great classes:—

1. *Synarthroses or Imperfect or Immovable Joints.*—In these there is no smooth surface between the joints, the articulated surfaces being held together quite firmly. In some there is a complete interlocking of the bones—the line where they come together being called a suture. As an example of such may be mentioned the bones of the skull. In other cases, as for instance the bones which form the vertebral-column, the union of the adjacent bones is not so complete, but the individual vertebræ are separated by plates of flexible fibro-cartilage, which confers upon the column, springiness but little real movement. The bones of the pelvis are also united by joints of this kind.

2. *Diarthroses or Perfect or Movable Joints* in which the bony surfaces are covered with cartilage and separated from each other by a synovial membrane or sac and one surface is capable of free movement over the other. The nature and extent of the movement depends upon the forms of the articular surface and the disposition of the ligaments, which are firm fibrous cords passing from one bone to the other. The movable joints may be divided as follows:

(a) *Ball and socket joints,* in which the ball-shaped end of one bone plays in a cup-shaped socket of another. The two best examples of such a joint are the shoulder and hip joint. Movement may be in any direction, but the extent of the movement depends principally upon the depth of the cup, it being much greater in the shoulder joint where the cup is shallow than in the hip joint where the cup is very

deep. In joints of this kind the balls are kept in the socket principally by means of ligaments passing from one bone to the other.

(b) *Hinge joints*, in which the movement is more like that of a hinge. Hinge joints may be single or double, that is, move only in one plane, or in two planes. As an example of the former may be mentioned the elbow joint, it being possible for the fore-arm to be drawn up to the arm in only one plane; another good example of such is the knee joint. In a single hinge joint it is usually found that the surface of one of the articular bones is concave and the other convex, as is the case in the elbow joint. In a double hinge joint the articular surface of each bone is concave in one direction and convex at another, and it is possible to move the bone in at least two planes; as an example of such may be mentioned the articulation between the metacarpal bone of the thumb and the trepezium of the wrist joint.

(c) *Pivot joints* are those in which one bone forms an axis or pivot upon which another turns allowing a rotary movement. The best example of such is the atlas and axis, the first two bones of the vertebral column. The axis or second cervical vertebra possesses the pivot namely the odontoid process which projects through a ring in the atlas. The lower concave surfaces of the atlas play quite freely over the upper convex surfaces of the axis permitting a rotation of the head, the pivot holding the two bones in proper relationship to each other. The nodding of the head is produced by a moving of the skull upon the atlas, but when the head is rotated from side to side the skull does not move upon the atlas but the atlas turns upon the axis. Another example of a pivot joint is seen in the fore-arm. If the elbow is placed upon a table, it is possible to rotate the fore-arm in such a way that the back of the hand is up when it is called pronation, or the back of the hand is down when it is called supination. This is due to the fact that the radius can rotate and turn freely in the articulation between it and the ulna.

The principal function of joints is to permit movement. The movements of the body may be defined as flexion which refers to the bending of the part; extension or straightening out; adduction, or bringing of the part to the middle line; abduction or drawing of the part from the middle line; rotation, turning on its own axis; circumduction, the making of a movement which describes a conical surface by rotation around an imaginary axis, and gliding which refers to simple backward and forward movement between articulated surfaces.

*Diseases of Joints.*—Malformations producing diseases of joints may be congenital or acquired. Among the best examples of the congenital form are the various forms of club-foot:—pes varus, the sole of the foot turned in; pes valgus, the sole of the foot turned out; pes equinus, the foot extended and supported upon the anterior ends of the metatarsal bones; pes calcaneus, the foot flexed and resting

on the heel. Combinations of these conditions are frequently met with. At the knee joint are found: genu valgum, in which the knees are bent in (knock knee), and genu varum, in which the knees are bent out (bow legs). As examples of acquired malformations may be mentioned, (a) Luxation or dislocation in which the relation of the articulating bones is altered. Such are usually the results of violence, although it occasionally happens when the ligaments of the joint are in a very relaxed condition. When due to violence the ligaments and other soft tissues around the joint are more or less torn, and unless the dislocation is soon reduced the tissues become inflamed producing a marked swelling which often interferes with the proper reduction of the dislocation. If the dislocation is not reduced the inflammation eventually subsides and the head of the dislocated bone is prone to form a new joint. Such a new joint is necessarily a weak one and does not permit of the same function as the true joint. (b) Ankylosis refers to a condition in which the normal mobility of the joint is interfered with. It is a condition which usually follows inflammation of the joint. The diseased tissue may be fibrous or cartilaginous when there is still some movement, or bony when movement is completely lost.

The principal disease of joints is inflammation or arthritis which may be acute if of short duration, or chronic if of long duration. Acute arthritis may be caused by injury as a fall or blow or by bacteria, such as frequently occurs in the course of various infectious diseases as rheumatism, scarlet fever, small-pox, pyemia, typhoid fever, anemia, gonorrhœa, etc. In these cases the causitive agent of the disease circulates in the blood and frequently becomes localized in the joints. The inflammation may be serous when there is an accumulation of a large amount of watery fluid and the joints are markedly swollen, or purulent when the joint is filled with pus. In other cases there is inflammation with coagulation of the serum and is spoken of as dry or fibrinous arthritis and there is but little swelling. The term synovitis is frequently employed to designate inflammation of the synovial membrane.

*Treatment.*—On account of the fact that most cases of acute arthritis are caused by bacteria it is usually the accompaniment of infectious diseases and such patients are under the care of physicians. The treatment consists principally in rest for the part, with hot or cold applications. A liniment is frequently employed to remove the pain, but the rubbing of the part should be discouraged in as much as it frequently aggravates the condition and may cause the inflammation to spread to other parts of the body.

The term rheumatism (q. v.) is frequently employed to designate any painful affection of joints. Chronic arthritis may be due to a number of causes, such as injury when mild in character and continued for a long time. The condition sometimes called 'house-maid's knee' refers to

the swelling of the knee due to an inflammation of the synovial membrane as the result of irritating the knees when scrubbing floors. In other instances chemical agents seem to be the cause of the inflammation. As one of the best examples of such may be mentioned gout which is a constitutional disease which affects especially the rich and the poor; the rich because of excessive eating and the poor because of insufficient eating. It is characterized pathologically by a deposit of crystals of urate of sodium in the cartilage and the synovial sac of the joints. The presence of these sharp crystals causes a marked irritation which is more severe at night because of the relaxed condition of the ligaments which permits a greater mobility. The paroxysms are frequently very painful and affect first and chiefly the metatarsal joint of the big toe. Later the small joints of the other toes and of the hands are also frequently affected. In other cases chronic arthritis is of nervous origin and accompanies various diseases of the spinal cord, such as locomotor ataxia. In still other cases it is caused by bacteria, such as the bacillus of tuberculosis. Tuberculosis of joints is by no means a rare disease. It is sometimes primary, i. e., it represents the first focus of the disease in the body, but frequently is secondary to tuberculosis in other parts of the body such as the bones, lungs, etc. Tuberculosis of the joints usually begins in the synovial membrane but gradually destroys the articular surface and extends into the bony structure. Thus it is a slowly forming process frequently unaccompanied by pain but is characterized by a swelling which is of a white color, and therefore frequently called 'white swelling.' Because of the fact that it is a chronic process it does not contain a large amount of blood to make the part feel warm as an acute inflammation and is therefore often referred to as a 'cold abscess.' If the part is exposed it is found that the structures forming the joint have all been destroyed and reduced to a rather soft light colored cheesy like material.

*Tumors of Joints.*—Joints are not frequently affected by true tumor formations. Occasionally, however, tumors composed of cartilage, called chondromata, develop from the ends of long bones, and project into the joints. More frequently small tumor-like formations of the cartilage of the bone are seen in chronic inflammations. Pieces of these formations are frequently broken off (which may also be the case with the normal cartilaginous structure) and exist as free and movable bodies in the joints. These may be single or may exist in large numbers. Sometimes they are small as grains of rice; at other times they are as large as a small hazel-nut. When they become located between the articulating surfaces of the joint it produces much pain and often an inability to move the joint in a certain direction. These free bodies can frequently be felt through the skin and often require an operation for their removal. The two special affections of joints, namely rheumatism and arthritis deformans, are considered in separate articles.

JOINT SENSATIONS: those conscious experiences which arise when the sensory nerves supplied to the joints are excited either through pressure of the joint surfaces upon each other, or through the friction of joint surfaces on each other during movement. See MUSCLE SENSATIONS; KINÆSTHETIC SENSATIONS.

JOINT TEN'ANCY: a legal term signifying an estate held by several persons in equal shares. They are said to hold *per my et per tout,* which means that for the purpose of survivorship each holds the whole, but that for the purpose of disposal each owns only his own share. Equality of shares is one of the incidents of a joint tenancy; if the part of the respective owners become unequal, a tenancy in common, as it is termed, is created. In a tenancy in common there is no survivorship, the estate upon the death of the holders going to their respective heirs. Under the English common law, if an estate is conveyed to several persons, without any terms as to how it should be held, it is regarded as a joint tenancy, but this rule is not favored in America, being founded upon the feudal notion of entirety of service due the lord by the vassal. In many of the United States the statutes provide that estates granted or devised to two or more persons in their own right, without qualification, shall be deemed tenancies in common, unless the intent to make them joint tenancies clearly appears. A joint tenant is not prohibited from conveying his share or interest to a stranger, but the latter would not become a joint tenant with the other co-tenant of the property; he would be a tenant in common with him. But a devise by one joint tenant, curiously enough, does not have the effect of conveying the tenant's interest. The reason for this distinction is said to be, that one takes effect during life, and the other after life. As a rule, estates given to two or more trustees are held in joint tenancy, and go to the survivor, even in the states having the statutes before mentioned. There is neither dower nor courtesy in estates held in joint tenancies. The right of survivorship in the co-tenant being inconsistent therewith.

JOINTURE, n. *jŏynt'ūr* [OF. *joincture;* F. *jointure,* a joining—from L. *junctūră,* a joining, a joint—from L. *jungĕrĕ,* to join together]: a settlement of lands and tenements made to a woman in consideration of marriage, as a substitute for dower. Originally it was a joint estate limited to both husband and wife as a joint tenancy and subjected to survivorship. The wife takes nothing under the settlement until after the death of the husband, unless special provisions are incorporated, which in reality modifies the effect of a regular jointure. In some settlements, denominated jointures, provisions are inserted to the effect that they are not to exclude enjoyment of dower; but such provisions are an inno-

vation upon the established province of jointures. A good jointure must provide that it shall take effect, in possession and profit, immediately after the death of the husband; that it shall be for the life of the wife herself, and cannot be left in trust for her use and benefit. It should be provided that it is in settlement of all dower interest, in order to maintain its distinctive features of jointure. The settlement must be executed before marriage, as marriage constitutes the entire consideration for the jointure. Such an instrument properly executed before marriage is binding on the wife and a complete bar to dower in any dowable lands owned or conveyed by the husband during the marital relations. Without the intervention and assistance of legislative action, no other form of agreement is effectual to bar dower. It sometimes happens that the wife is deprived of her jointure by lawful acts to which she is not a party, as by the lands being taken for public purposes, or in some other manner equally legitimate. In such a case the settlement does not bar her claim against the husband's estate to the extent to which she is deprived of her jointure.

JOIN'VILLE, François Ferdinand Philippe Louis Marie d'Orleans, Prince de: b. Neuilly 1818, Aug. 14; d. 1900, June 16, third son of Louis Philippe, King of the French. He was educated for the naval service; became a lieut. 1836; was given command of the corvette *Creole* 1838, and greatly distinguished himself in the attack on Fort San Juan d'Ulloa and the city of Vera Cruz, leading the storming party and capturing the Mexican gen. Arista in a hand-to-hand combat, for which he was made a chevalier in the Legion of Honor and promoted capt. He commanded the frigate *La Belle Poule*, and conveyed the remains of Napoleon from St. Helena to France 1840; married the Princess Francesca de Braganza, sister of Dom Pedro II., ex-Emperor of Brazil, and was appointed rear-admiral 1843; commanded the fleet that bombarded Tangiers and seized Mogador 1844, for which he was promoted vice-admiral; and was commander of the fleet off Algiers, with his brother, the Duc d'Aumale, commanding the French milit. forces in Africa, when the revolution broke out 1848. Both brothers yielded to an apparent popular will, vacated their offices, and removed to England. He spent the next 13 years in travel and authorship. On the outbreak of the American civil war, he came to the United States with his son, the Duc de Penthièvre, and his nephews, the Comte de Paris and the Duc de Chartres. His son entered the U. S. naval academy, and his nephews received commissions from the U. S. government, and served in his company on Gen. McClellan's staff during the Virginia peninsular campaign. In the early part of the Franco-German war, he vainly begged

Napoleon III. (who had confiscated his French estates 1852) to permit him to serve in the defense of his country. After the revolution 1870, Sep. 4, considering their exile ended by the fall of the empire, he and the Dues d'Aumale and de Chartres returned to France, and served in the army under assumed names till formally expelled by Gambetta's order. In 1871, the French assembly repealed the edict of exile against the Orleans princes, and the same year he and the Duc d'Aumale were elected members of the national assembly. He retired from public life in 1876 because of deafness, was again exiled by the law of 1886 against royalist families but returned in 1895.

JOINVILLE, *joyn'vĭl*, F. *zhwăng-vēl'*, JEAN, Sieur or Sire DE: one of the earliest French historians, whose works possess much interest or value: 1224–1319, July 11; of an old family, in Champagne. He held high office under Thibaut IV., King of Navarre. In 1248, he joined Louis IX. of France with nine knights and 700 armed men in his crusade; shared that monarch's captivity; and returning to France 1254, was frequently at his court, but declined to accompany him in his second crusade. After the death of Louis IX., the Sieur de Joinville wrote *Histoire de St. Louis* one of the most valuable works in the literature of the middle ages, combining an excellence of style then very rare with an interesting exhibition of individual character in the minute record of events. It has the garrulity of old age, and deals with all manner of little affairs; but it gives the reader almost a personal acquaintance with its hero, St. Louis, as well as with its author. The *Histoire de St. Louis* was published first 1546; one in modernized French, was published by Natalie de Wailly 1873.

JOIST, n. *joyst* [OF. *giste*, a bed, a place to lie on, a home—from mid. L. *gista*, a sleeping-place—from L. *jacĕrĕ*, to lie: F. *gésir*, to lie]: one of the lighter horizontal timbers of a floor or ceiling, on which the boards or laths may be nailed (see FLOORS): V. to fit with joists. JOIST'ING, imp.: N. the timbers of a floor on which the flooring is nailed. JOIST'ED, pp.

JOKAI, *yō'kâ-ĭ*, MAURUS, Hungarian novelist: b. Komorn, 1825, Feb. 19; d. Budapest, 1904, May 5. In 1846 he received his advocate's diploma, but never practised, and from a very early age devoted himself to literary work. In 1842 he produced a drama, *The Jew Boy*, in 1846 his first novel. *Work-days*, was published, and in 1847 he issued a collection of stories entitled *Flowers of the Desert*. His *Revolution and Battle Pictures* appeared in 1849, and after that he devoted himself with extraordinary energy to journalistic and literary work, producing in all more than 300 volumes. He was a member of the Hungarian parliament and the recognized leader of the Liberal opposition since the

restoration of the constitution, and in 1897 was appointed a life member of the House of Magnates. He was a successful newspaper editor continuously from 1858 till his death, his last paper being the *Nemzet* (Nation). He is best known by his numerous romances and novels. Among the latter are *Transylvania's Golden Age* (1851); *The Man with Two Horns* (1852); *The Turks in Hungary* (1852); *A Hungarian Nabob* (1854); *Kárpáthy Zoltan* (1855); *Politieal Fashions* (1861); *The New Landlord* (1862); *Dr. Dumany's Wife* (Eng. trans. 1891); *In Love With the Czarina* (Eng. trans. 1894); *The Nameless Castle* (Eng. trans. 1891); *The Green Book* (Eng. trans. 1897); *The Lion of Janina* (Eng. trans. 1897); *The Poor Plutocrats* (Eng. trans. 1899); *Debts of Honor* (Eng. trans. 1900); *The Baron's Son* (Eng. trans. 1900); *The Day of Wrath* (Eng. trans. 1900). His best plays are: *King Kolomon* (1855); *Manlius Sinister* (1856); *Georg Dozsa* (1858); *The Martyrs of Szigetvar* (1859); and *Milton* (1878). His *Political Poems* appeared in 1880. Consult Nevai, *M. Jokai* (1894).

JOKE, n. *jōk* [Dut. *jok*, sport—from L. *jŏcŭs;* It. *gioco*, sport, game: F. *jouer*, to play]: something said in order to raise a laugh; a jest; something not in earnest; a trick: V. to be merry in words or actions; to make merry with; to jest. Jo'KING, imp.: ADJ. uttering jokes: N. utterance of jokes. JOKED, pp. *jōkt.* Jo'KER, n. *-kėr*, a merry fellow; a jester. Jo'KINGLY, ad. *-lĭ*, by way of a joke; in a joking way. IN JOKE, not in earnest; only for the sake of raising a laugh. PRACTICAL JOKE: see under PRACTICABLE.—SYN. of 'joke, v.': to jest; sport; rally; be merry.

JOK'TAN (Arab. *Kahtan*): son of Eber, descendant of Shem, and progenitor of various tribes in s. Arabia: see YEMEN.

JOLE, n., or JOWL, n. *jōl* [AS. *ceole*, the jaw; *eeafl*, the snout, the jaw: OF. *gole*, the mouth, the throat: Icel. *kjaptr*, the mouth, the jaw]: the face or cheek; the head of a fish. CHEEK BY JOLE, or JOWL, with the cheeks together; side by side.

JOL'IBA. See NIGER.

JOLIET, *jō'lē-ĕt:* city, cap. of Will co., Ill.; on the Des Plaines river, the Ill. and Mich. canal, and the Chicago Rock Island and Pacific, the Michigan C., the Atchison, T. & S. F., the Elgin, J. & E., the Lake Shore & E., and the Chicago & A. R.R.'s; about 30 miles southwest of Chicago. The first permanent settlement was made in 1831 and the city was chartered in 1859. The place was named in honor of Louis Joliet, a Canadian navigator and one of the party who with Marquette visited this place in 1673. The Illinois and Michigan Canal and the Joliet River supply the city with good water power. The city is situated in a rich agricultural

region, and large limestone quarries are in the vicinity. Its chief manufacturing establishments are the American Steel and Wire Company works, the Illinois Steel Company factory, the American Tin Plate Company, machine-shops, agricultural implement works, foundry and furnace products, breweries, flour-mills, boot and shoe factories, and furniture factories. Some of the public institutions are the State penitentiary, Silver Cross and Saint Joseph's hospitals, Saint Mary and Saint Francis academies, and a public library which contains about 16,000 volumes. The Illinois Steel Company Athenæum, a club-house for workingmen, is a fine institution. The city owns and operates the waterworks. Pop. (1910) 34,670.

JOLIET, *zho-le-ā'*, Louis: 1645, Sep. 21—1700; b. Quebec: explorer. He was educated in the Jesuit College, made a special study of hydrography, received minor orders in the priesthood, and graduating 1666 gave up his intention of becoming a priest, and spent several years in travelling and trade in the w. region. In 1672 he was selected by the French intendant and govenor-general, because of his familiarity with the languages of the Indians and the topography of their country, to attempt explorations of the Mississippi river, then supposed to empty into the Sea of California. Associating with him Father James Marquette (q.v.) who had had experience with Indians, and 5 other Frenchmen, he started from Michilimackinac 1673, May 17, ascended Fox river from Green Bay, proceeded thence down the Wisconsin river, entered the Mississippi river June 17, and followed it to lat. 33° 40′ n., below the mouth of the Arkansas river. Satisfied that the river emptied into the Gulf of Mexico instead of the Pacific, he returned and reached Lake Michigan by the Illinois river. He lost all his papers and maps in the Lachine rapids, made new ones from memory, and was supplanted in the further work of Mississippi river exploration by Robert La Salle (q.v.). He was granted the seigneury of Anticosti Island, appointed royal hydrographer, and 1697 obtained the seigneury of Joliet or Joliette, s. of Quebec.

JOLIETTE, or Industry Village, Canada, town and county-seat of Joliette County, Quebec; an the L'Assomption River, at the junction of a branch of the Canadian Pacific with the Great Northern Ry. of Canada; 40 miles north of Montreal. It is an important market town, has fine water power, and has a good trade in lumber and farm products. It has large foundries, saw, paper, and grist mills, and manufactories of woolen goods, leather, boots and shoes, biscuit, agricultural implements, carriages, and tobacco and cigars. Limestone for building is quarried in the vicinity. It has two churches, a college, hospital, convent, orphan asy-

lum, and mechanic's institute; an industrial school, banks, and weekly newspapers. The municipality controls the waterworks and electric light. Pop. (1901) 4,220.

JOLL, v. *jōl*, or JOWL, v. *jowl* [see JOLT]: in *OE.*, to knock together; to dash; to beat against anything, as with the head; to clash with violence. JOLL'ING, imp. JOLLED, pp. *jōld*.

JOLLY, a. *jŏl'lĭ* [OF. *jolif;* F. *joli;* It. *giulivo*, gay, fine, merry: Icel. *jól*, or *jul*, Christmas, the great season of festivities in rude times: Dut. *joelen*, to revel, to make merry]; merry; full of life and mirth; of fine appearance; plump. JOLLITY, n. *jŏl'lĭ-tĭ*, or JOL'LINESS, n. *-nĕs*, noisy mirth; hilarity. JOL'LILY, ad. *-lĭ*, in a jolly manner; with noisy mirth. JOL'LIFICA'TION, n. *-fĭ-kā'-shŭn* [L. *făcĭō*, I make]: in *familiar language*, noisy festivity and merriment. JOLLIMENT, n. *jŏl'lĭ-mĕnt*, in *OE.*, merriment; noisy mirth; gayety.—SYN. of 'jollity': gayety; festivity; merriment; mirth; joviality; in *OE.*, handsomeness; beauty;—of 'jolly': gay; joyous; airy; lively; jovial; cheerful; healthy; in *OE.*, handsome; well-favored.

JOLT, v. *jōlt* [old or prov. Eng. *julk*, to splash, to jolt; *jolle*, to knock: a word imitative of the sound of shaking and knocking]: to shake or disturb by sudden jerks; to shake with sudden risings and fallings: N. a sudden jerk or shock. JOLT'ING, imp.: ADJ. giving sudden jerks or shakes to. JOLT'ED, pp. JOLT'ER, n. one who. JOLT'INGLY, ad. *-lĭ*. JOLTHEAD, JOLTER-HEAD, or JOLLED-HEAD, *literally*, one whose head has been knocked about or against another's, or against any other object, as a punishment for stupidity or laziness; a blockhead. *Note.*—In Shakespeare we have 'may *joll* horns together'='may *knock* heads together': 'the knave *jowls* it to the ground'='*throws* it with a jerk to the ground.'

JOMINI, *zho-mē-nē'* HENRI, Baron: 1779, Mar. 6—1869, Mar. 22; b. Payerne, in the canton de Vaud; general in the French, and afterward in the Russian service, and writer on military tactics. He began his military career in a Swiss regt. in the French service, and chiefly through the friendship of Ney, was raised to high military rank by Napoleon. In 1804, he began the publication of *Traitè des Grandes Operations Militaires.* He distinguished himself in active service during the retreat from Russia; but offended at his treatment by Napoleon, he passed over to the allies after the armistice of Plaeswitz, and entered the service of Russia, in which he became lieut.gen. and aide-de-camp to the emperor. He declined to take part in the invasion of France 1814. In 1828, he was active in the military operations at Varna; and 1855 he settled at Brussels. Besides the work already mentioned, his *Histoire Critique et Militaire des Campagnes de la Revolution* (5 vols.

Paris 1806), *Vie Politique et Militaire de Napoleon* (4 vols. Par. 1827), and *Tableau Analytique des Principales Combinaisons de la Guerre* (Petersb. 1830) are of great value to the military student. His writings give the best military account of Napoleon's campaigns.

JOMMELLI, *yo-mĕl'lē*, NICOLO: 1714, Sep. 11—1774, Aug. 28; b. Naples: Italian composer. He studied music with Muzillo, Prota, Mancini, and Leonardo Leo; first composed cantatas, then applied himself to dramatic music, produced his first opera *Errore amoroso* in Naples 1737, and his first serious opera *Odoardo* 1738, and the fame achieved by these works led to his being invited to Rome 1740. There, under the patronage of Cardinal York, he composed two new operas, and 1741 went to Bologna and composed *Ezio* and studied with Padre Martini. He then made a tour of the chief cities of Italy; produced *Didone* in Rome, *Merope* for the theatre, and a *Laudate* for the church of Santo Marco in Venice, and *Eumene* in Naples; spent two years in Vienna giving instruction in music to the empress; and 1748 was recalled to Rome, where he composed *Artaserse* and the oratorio *La Passione*, and was appointed chapel-master of St. Peter's Church. He resigned this office 1754 and was chapel-master and court-composer at Stuttgart till 1772, when he returned to Naples. His last, and believed by many his greatest, work, *Miserere*, was composed after he had been paralyzed. His works comprise 40 operas, 5 cantatas, 4 oratorios, and 34 church compositions.

JONAH, *jō'na* [Heb. *Yonah*, a 'dove;' *Gr. Jonas*]: Hebrew prophet, son of Amittai; b. Gath-hepher, a town of Galilee in Zebulun, not far from Phœnicia; lived in the last half of B.C. 8th c., in the reign of Jeroboam II.; probably, therefore, the earliest of the prophets whose writings are extant. (See II K. xiv. 25.)—The BOOK OF JONAH has always been placed by the Jews among their canonical books. Critics have much debated the question whether it is a history or an allegory. Kalisch deems it a symbolical story founded on fact. Other writers, inclining to this view, point out that Christ's use of it (see below) involves only an acceptance of it as a popular and familiar piece of symbolism, which was fitly applicable as an illustration of truth regarding himself. It has been urged by Rosenmüller and other critics, that the miracle concerning the great fish (not a whale) recorded in the book is not to be regarded as a historical fact, but as an allegory, founded on the Phœnician myth of Hercules rescuing Hesione from the sea-monster by leaping himself into its jaws, and for three days and three nights continuing to tear its entrails. The design of the author in incorporating this myth with the *actual* voyage of Jonah, and the conversion of the heathen Ninevites was, it is suggested to

bring out more vividly the truth, that God will not permit his merciful intentions to be frustrated by the disobedience even of a prophet. On the other hand, it has been thought by orthodox theologians generally, that the language of Christ (Matt. xii. 39–41; xvi. 4; Lk. xi. 29), and the manner in which it is mentioned in Josephus and the Apocrypha, show this miracle to be strictly historical.—The possible purpose of the book has been suggested to be to teach that God had regard for heathen nations as well as for the Hebrews; or to show the missionary character of the people of Israel in the Divine plan; or to exhibit prophesy as conditioned in its fulfilment on human activity. Jonah has been supposed by early authorities to have been the son of the widow of Sarepta (I K. xvii. 24), also to have been the pupil of Elisha. Jonah's tomb is shown at Nebi-Yunus (Prophet Jonah), near Mosul.—Leusden, *Jonas Illustratus* (Trai. 1692); Friedrichsen, *Kritischer Ueberblick der Ansichten vom Buch Jonas* (Altona 1817); Rosenmüller, *Proleg in Jonam;* Drake's *Notes* (1853); also Ewald and the more recent commentators and critics.

JONAS, *yō'nâs*, Justus: 1493, June 5—1555, Oct. 9; b. Nordhausen, Saxony: theologian. He studied law, became prof. of jurisprudence at Erfurt and Wittenberg, and while in the latter city studied theology, accepted the doctrines of the Reformation, and was appointed prof. of theol. in the university. He accompanied Luther to the diet of Worms, was at the conference in Marburg and the imperial diet of Augsburg, was appointed preacher and ecclesiastical supt. at Halle 1541, and Coburg 1546, aided Luther in translating the Bible, and was preacher and supt. at Eisfeld at the time of his death.

JONATHAN Ben-Uzziel, *jŏn'a-than bĕn ŭz-zi'ĕl*, or *ŭz'zē-ĕl:* lived about B.C. 30; b. Palestine: author and translator. He was educated by Hillel (q.v.), and applied himself first to the translation of the Hebrew prophetical writings into Chaldee, and then, according to various authorities, to the authorship of the targum (interpretation or paraphrase) of the Pentateuch bearing his name, and the similar work called the *Five Megilloth.* The *Targum of Jonathan* was printed in Venice 1590–1, Bâle 1607, Hanau 1614, Amsterdam 1640, Prague 1646, and Vienna 1859; with English translation, London 1862; and the paraphrase on the prophets, first printed in Venice 1494, is now found in all rabbinical Bibles.

JONES, Alexander, American inventor and journalist: b. North Carolina about 1802; d. New York, 1863, Aug. 25. He studied medicine in Philadelphia, entered practice in Mississippi, there became interested in cotton cultivation, and made important improvements in the

cotton-gin. He invented also a street-sweeping machine. He became an agent of the Associated Press in 1850, and subsequently commercial reporter of the New York *Herald.* His published volumes are: *Cuba in* 1851 (1851); *Historical Sketch of the Electric Telegraph* (1852); and *The Cymri of '76* (1855).

JONES, Alfred Gilpin, Canadian statesman: b. Weymouth, Nova Scotia, 1824, September; d. Halifax, 1906, March 15. After a secondary education, he entered mercantile life, opposed confederation in 1865, sat in the Dominion Parliament for Halifax in 1867–72 and again in 1874–8, was a member of the privy council, and in 1878 was minister of militia. In 1887–91 he was a third time in Parliament. In 1900 he was appointed Lieutenant-Governor of Nova Scotia. At first a Conservative, he later identified himself with the Liberals, and favored a trade-union with the United States.

JONES, Amanda Theodosia, American poet: b. East Bloomfield, Ontario County, N. Y., 1835, Oct. 19. Some of her war songs were very popular. She published: *Ulah and Other Poems* (1860); *Atlantis and Other Poems* (1866); *A Prairie Idyl, and Other Poems* (1882); *Flowers and a Weed* (1899); *Rubaiyat of Solomon and Other Poems* (1905); etc.

JONES, *jōnz*, Anson, M.D.: 1798, Jan. 20—1858, Jan. 7; b. Great Barrington, Mass.: president of the republic of Texas. He received his medical education in Conn., was licensed to practice 1820, lived some years in Philadelphia, New Orleans, and in various cities of S. America; settled in Brazaria co., Tex., 1833, and at the beginning of the troubles between Tex. and Mexico became an enthusiastic advocate of colonial independence. He was a surgeon in the Texan army during the war, and after independence was achieved was a member of the Texan congress 1837–8, minister of the republic to the United States 1838–9, Texan senator 1839–40, secretary of state 1841–44, and president of the republic from 1844, Dec., till its annexation to the United States 1846, Feb. After the accomplishment of annexation—which he had strongly opposed—he engaged in agricultural pursuits.

JONES, Charles Colcock, Jr., American author: b. Savannah, Ga., 1831, Oct. 28; d. 1893, July 19. He was graduated at Princeton (1852), at Harvard Law School (1855), and was admitted to the bar in 1856. He served as colonel of artillery in the Confederate army during the War for the Union, and on the return of peace removed to New York, where he practised law. In 1877 he returned to Georgia and devoted his time to the study of the history and archæology of that State. He wrote: *Negro Myths from the Georgia Coast, Told in the Vernacular* (1888); *The History of Georgia* (1883).

JONES, David Phillips, American naval engineer: b. Philadelphia 1841; d. Pittsburg 1903, Jan. 30. He entered the navy in 1862, during the Civil War took part in the operations on the James (Va.) and the St. John's (Fla.), and was present at Bermuda Hundred, and in 1889 attained the grade of chief engineer. In 1874–9 he was instructor in steam engineering at the Naval Academy, Annapolis, and from 1889 to 1892, when he was retired, was on duty at the naval training-station at Newport, R. I. He was chief inspector of steel for the district at Pittsburg during the Spanish-American war.

JONES, Edward Franc, American soldier and manufacturer: b. Utica, N. Y., 1828, June 3. He was colonel of the 6th regiment of Massachusetts volunteers, which he led through Baltimore at the opening of the Civil War, and which was attacked by the mob. He was subsequently brevetted a brigadier-general of United States volunteers. He was a member of the Massachusetts Legislature in 1865, but removed to Binghamton, N. Y., the same year. He was lieutenant-governor of New York 1886–91, and originated the phrase, 'He pays the freight.' He published *The Origin of the Flag; Richard Baxter; Uncle Jerry;* etc.

JONES, Henry Arthur, English dramatist: b. Grandborough, Buckinghamshire, England, 1851, Sept. 28. After a secondary education, he took up writing as a means of livelihood, and in 1879 appeared as playwright with *A Clerical Error*, performed by Wilson Barrett at the Court Theatre. He followed this by a series of comedies of modern life, clever in dialogue and stage-craft, which have been very popular, particularly with English audiences. They include: *Silver King* (1882); *Saints and Sinners* (1884); *Middleman* (1889); *Judah* (1890); *The Dancing Girl* (1891); *The Tempter* (1893); *The Masqueraders* (1894); *The Triumph of the Philistines* (1895); *The Rogues' Comedy* (1896); *The Liars* (1897); *The Manœuvres of Jane* (1898); *Carnac Sahib* (1899); *The Princess' Nose* (1902); *Chance, the Idol* (1902); *Whitewashing Julia* (1903); *Joseph Entangled* (1904); *The Chevalier* (1904); *Mrs. Dane's Defense* (1904).

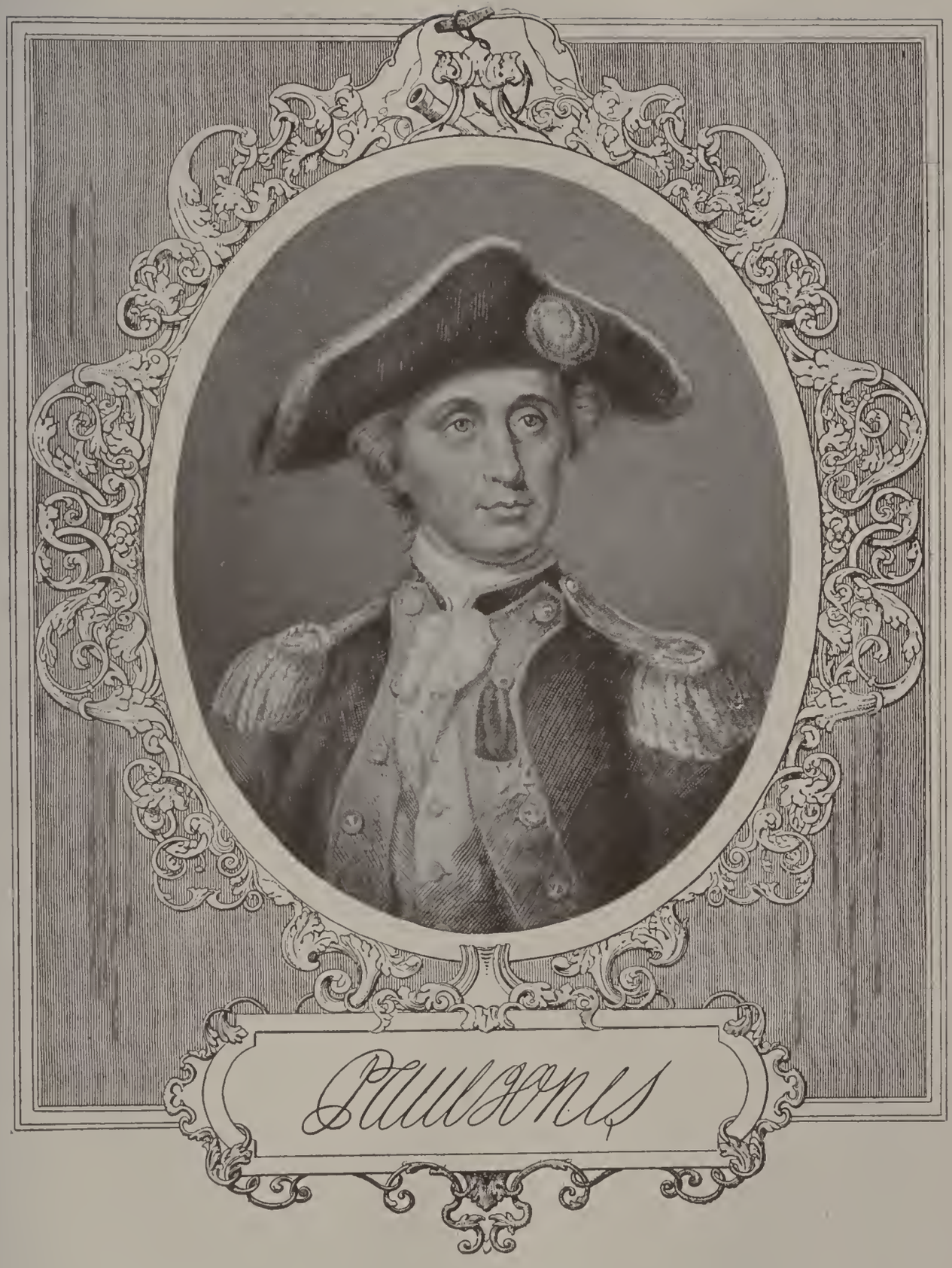
JONES, *jōnz*, Inigo: English architect: abt. 1572–1651, July 5; b. London; son of a cloth worker. Of his early history little is known till thetime when the Earl of Pembroke, attracted by his great aptitude at drawing, sent him abroad for four years to study the masterpieces of architecture in France, Germany, and Italy. While in Venice, he gave particular attention to the works of Palladio, whose style he introduced into England, whence we sometimes hear Jones designated as the English 'Palladio.' In 1605, he was employed by James I. in arranging the scenery, etc., for the masques

of Ben Jonson, then the chief amusement of the court. Jonson afterward satirized his fellow-laborer in *Bartholomew Fair*. In 1612, Jones revisited Italy, still further to improve his style, and on his return to England was appointed surveyor gen. of the royal buildings. Jones was at this time accounted the first architect of England, and according to some, the first of the age. The state of architecture in England during Jones's time was an excellent foil to his genius, as the praise bestowed on his works shows, but still in any age he would have ranked high as an architect. His masterpiece is considered to be the Banqueting House at Whitehall. Other works of his are the church of St. Paul, in Covent Garden, Ashburnham House, and Surgeons' Hall, which, however, are very mediocre.

JONES, JACOB: 1770–1850, Aug. 3; b. near Smyrna, Del.: naval officer. He was educated for a physician, became clerk of the supreme court of Del., and entered the U. S. navy as a midshipman 1799, Ap. 10; was promoted lieut. 1801, commander 1810, and post-capt. 1813; was captured in the frigate *Philadelphia* 1803, and held prisoner in Tripoli nearly two years; appointed commander of the *Wasp* 1811, captured the British brig *Frolie* 1812, Oct. 18, was himself captured with his prize by the British frigate *Poietiers* the same day, and taken to Bermuda; commanded the *Maeedonian* 1813; and was subsequently in command of squadrons in the Mediterranean and Pacific. He received a vote of thanks and a gold medal from congress, and swords of honor from several states.

JONES, JOHN, M.D.: 1729–1791, June 23; b. Jamaica (L. I.), N. Y.: surgeon. He was educated as a physician and surgeon in London, Paris, Leyden, and Edinburgh, was surgeon to Johnson's expedition against Crown Point 1755, prof. of surgery in King's (now Columbia) College 1767–76, associate of Dr. Samuel Bard in founding the New York Hospital 1771, retired to Philadelphia on the British occupation of New York, and there became physician to the Penn. Hospital, and vice-pres. of the College of Physicians 1787. He was the family physician of Washington and Franklin, and published *Plain Remarks upon Wounds and Fractures, designed for the Use of the Young Military Surgeons of Ameriea* (New York, 1775). This work was the chief authority for American field-surgery in the Revolutionary war.

JONES, JOHN PAUL: 1747, July 6—1792, July 18; b. Arbigland, in the stewartry of Kirkcudbright, Scotland; son of a gardener named John Paul. He became a sailor, was for a short time mate of a slaver in the W. Indies, but left in disgust, and afterward settled in Virginia, assuming the name of Jones. He ardently embraced the cause of the American colonies. When the congress,


Pillons

1775, resolved to fit out a naval force, he offered his services, and Dec. 22, was appointed senior lieut. in the navy and assigned to the flagship *Alfred*. After engaging in the New Providence expedition, 1776, Feb.—Apr., he was given command of the 12-gun sloop *Providence*, with which he made a six weeks' cruise between the Bermudas and Canso, captured 16 prizes, and did much damage to British shipping and fisheries. Returning from this cruise, he was appointed to command the *Alfred*, with instructions to break up the Cape Breton fisheries and capture the coal fleet. He sailed Nov. 2, partially succeeded in his mission, and returned to Boston with 4 prizes, Dec. 15. In 1777, Jan., he was transferred to the *Providence*, and in June was appointed by congress commander of the new 18-gun ship *Ranger*, in which he sailed for France, Nov. 1, arriving at Nantes, Dec. 2. He received special instructions from the American commissioners in Paris to distress the enemies of the United States by sea or land; sailed from Brest, 1778, Apr.; burned a brig off Cape Clear; made a bold attack on Whitehaven and an unsuccessful attempt to capture the Earl of Selkirk on his estate near Kirkcudbright, Scotland; captured the *Drake*, a vessel superior to his own in crew and guns; and May 8 returned to Brest with his prize and 200 prisoners—nearly double his own crew. He was then detached by the American commissioners from his ship at the request of the French minister of marine; the *Ranger* was sent to America, and Jones, through the unfulfilled pledges of the French minister remained unemployed till 1779, Feb. At length his ambition to organize a flying squadron was partially gratified. The French minister appointed him to the command of the *Duras*, an old E. India merchantman that had been transformed into a war vessel with 42 guns, to which he was enabled to add six other vessels, two of them privateers. Changing the name of his flag-ship to *Bon Homme Richard*, in honor of his constant friend, Benjamin Franklin, he sailed from Lorient with his 7 vessels, Aug. 14. Within a month he had spread great alarm along the English coast, had captured or destroyed 26 vessels, and had run up the Forth and was about seizing the shipping of Leith when a sudden gale drove him out to sea. Learning that a fleet of English merchantmen from the Baltic was daily expected off the coast, he gathered his squadron off Flamborough Head, and quietly awaited its appearance. About noon, Sep. 23, he sighted the merchant fleet of 41 ships under convoy of the *Serapis* of 44 guns, and the *Countess of Scarborough* of 28, standing out from under the Head and bearing down toward the Straits of Dover. Jones ordered a general chase. The merchantmen sought refuge by running inshore under the protection of the guns in Scarborough castle. Jones's fastest vessel, the *Alliance*, commanded by a French officer, was the first to approach

the British men-of-war, but as soon as their character was determined the *Alliance* stood off from land. At 7:30 o'clock, Jones in the *Richard* came up with the *Scrapis*, and opened a heavy cannonade. A part of his battery was soon rendered useless, and after a few broadsides both ships became fouled. As the *Scrapis* began to lower an anchor to work clear of the *Richard*, Jones personally assisted in lashing the jib-stay of the *Scrapis* to the mizzen-mast of the *Richard*, and thus with sides touching, each ship discharged all her available guns against the other. The terrific fight lasted about three hours. Jones repelled a boarding party; the *Serapis* struck her flag; and the *Richard*, on fire in two places, was abandoned and sank early the next morning. While this encounter was in progress, the *Countess of Scarborough* surrendered to the *Pallas*, the capt. of the latter requested the French capt. of the *Alliance* to take his prize that he might assist the *Richard*, and the *Alliance*, from the supposed jealousy of her capt., fired several broadsides of grape into both the *Serapis* and the *Richard*. Jones took his prize to Texel, Holland, was given a gold sword and the order of merit by the king of France, voted the thanks of the American congress, and chosen by the congress commander of the ship-of-the-line *America*, then building. In 1788 he entered the Russian service with the rank of rear-admiral and promise of command of the fleet in the Black Sea; but through court intrigues he failed to obtain independent command, and retiring to Paris, died in poverty while an appointment to be commissoner and consul of the United States at Algiers was on its way to him. His funeral was attended by a deputation of the legislative assembly.

In 1905, through the effort of Gen. Horace Porter (q.v.), the body of Jones was recovered from its forgotten resting place after a long search, and after elaborate ceremonies in Paris on July 6, was transferred to the care of a deputation of the American navy. Transported by an escorting squadron, commanded by Rear-Adm. Sigsbee, to the United States, the honored remains found a final resting-place at Annapolis.

JONES, John Percival, American politician: b. Herefordshire, England, 1829. He came to the United States in 1831, was educated in the schools of Cleveland, Ohio, in the early days of California gold-mining went to that State where he acquired mining interests, and in 1863–7 was a member of the State senate. In 1867 he removed to Nevada, where he became a proprietor and the superintendent of the 'Crown Point' silver mine, through which he realized a fortune. He was elected to the United States Senate from Nevada in 1873, and this office he held by re-election until 1903. He was originally a Republican, was elected to the Senate as a 'Silverite' in 1897, and from 1900 was a 'Silver' Republican.

BATTLE BETWEEN THE SERAPIS AND BON HOMME RICHARD.
Sept. 22, 1779.

JONES, John William, American Baptist clergyman and author: b. Louisa, Va., 1836, Sept. 25. He was graduated from the University of Virginia in 1859 and from the Southern Baptist Theological Seminary, and during the Civil War served as private and then chaplain in the Confederate army. He was pastor of a Baptist church in Lexington, Va., 1865–71, and chaplain of Washington College during Lee's presidency, and since the last named date has been successively agent of various Southern institutions, chaplain of the University of Virginia, and pastor of several churches. Besides editing 14 volumes of the *Southern Historical Papers* he has published *Personal Reminiscences, Anecdotes and Letters of R. E. Lee* (1874); *Christ in the Camp, or Religion in Lee's Army; Memorial Volume of Jefferson Davis; School History of the United States;* etc.

JONES, Joseph Stevens, American playwright: b. 1811; d. Boston, Mass., 1877, Dec. 30. After his graduation from Harvard Medical School in 1843, he practiced medicine for several years; but was subsequently proprietor and manager of the Tremont, Old National, and other theatres in Boston at various times. Among the nearly 200 plays of which he was the author may be named: *Solon Shingle; The Liberty Tree; The Siege of Boston; Moll Pitcher; The Last Dollar; The People's Lawyer; Paul Revere; The Silver Spoon.*

JONES, Leonard Augustus, American jurist: b. Templeton, Mass., 1832, Jan. 13. He was graduated from Harvard in 1855 and from Harvard Law School in 1858. He was admitted to the Suffolk bar in 1858 and since 1884 has been one of the editors of the *American Law Review.* Among his many legal works are: *Law of Mortgages and Real Property* (1878–94); *Law of Mortgages of Personal Property* (1881–94); *Law of Easements* (1898). He was appointed judge of the court of land registrations in 1898.

JONES, Noble Wimberly, M.D.: 1724–1805, Jan. 9; b. near London, England: American patriot. He accompanied his father, Dr. Noble Jones, to Savannah while a child; was associated with him in the practice of medicine there 1748–56; became a militia officer, member of the Georgia assembly 1761, and its speaker; was delegate in the congress 1775–6, 1781–83, taken prisoner at the capture of Charleston 1780, and exchanged 1781; practiced medicine in Philadelphia 1781–2, Charleston 1783–88, and afterward in Savannah; and served in the Georgia assembly, and as president of the convention that revised the state constitution 1795.

JONES, Owen: 1809–1874, Apr. 19; b. London: architect and decorator. He served apprenticeship six years in the office of a London architect, spent four years in travel in Italy, Greece, Turkey, Egypt, and Spain, making a special study of the Alhambra in Granada, and

engaged in professional work in London 1836. His first publication was the great *Plans, Elevations, Sections, and Details of the Alhambra* with Gayangos's translation of Arabic inscriptions (London, 1st ed. 1836–42; 2d ed. with 101 plates 1847). In 1851 he was one of the supts. of works for the London exhibition; and decorated the interior of the vast exhibition building in Hyde Park, and of the Crystal Palace at Sydenham, where he designed and arranged the Egyptian, Greek, Roman, and Alhambra courts. He also designed and erected St. James's Hall, Piccadilly, decorated the palace of the viceroy of Egypt at Gesch, and designed the illuminations of the Book of Common Prayer. He received the royal medal for architecture 1857, and a diploma of honor at the Vienna exhibition 1873.

JONES, Samuel M., American manufacturer and politician: b. Wales 1846, Aug. 3; d. Toledo, Ohio, 1904, July 12. He came to the United States with his parents when three years old; at 18 he was working in the oil-fields of Titusville, Pa. In 1893 he invented improved oil-well apparatus and set up the Acme Sucker Rod Factory in Toledo, Ohio. Here he introduced reforms in the condition of his employ·es, fixing a minimum wage, gave an eight-hour day, and introduced a system of profit-sharing; he also opened a pleasure ground adjoining the factory, known as 'Golden Rule' Park. In 1897 he was nominated for mayor of Toledo by the Republican party and elected; but his subsequent advocacy of municipal ownership of public utilities and of the abolition of the system of private contract in doing city work alienated the support of his party. His administration was, however, very popular, and he was re-elected as independent candidate in 1899 and 1901. In 1900 he was non-partisan candidate by petition for governor of Ohio, but was defeated.

JONES, Samuel Porter, commonly known as Sam Jones, American Methodist revival preacher: b. Chambers County, Ala., 1847, Oct. 16; d. 1906, Oct 15. He was admitted to the Georgia bar in 1869, but his drinking habits put an end to his career as a lawyer. Becoming converted in 1872 he was admitted to the ministry of the Methodist Church South, the same year, and has since devoted himself to evangelistic work, his marked eccentricities of speech and manner probably contributing somewhat to his popularity. He has published: *Sermons and Sayings; Music Hall Sermons; Sam Jones' Own Book;* etc.

JONES, Sir William: 1746, Sep. 28—1794, Apr. 27; b. London: distinguished linguist and oriental scholar. He was sent to Harrow 1753, where he soon eclipsed all his fellows, particularly in classical knowledge. In 1764, he was entered at University College, Oxford. In 1765 he left Oxford, to become tutor to the eldest

son of Earl Syencer, with whom he remained five years. In 1770 he published at the request of the king of Denmark, *Life of Nadir Shah*, translated into French from the Persian; in the following year, a *Persian Grammar*, republished some years ago, with corrections and additions, by Prof. Lee; and 1774, *Commentaries on Asiatic Poetry*, republished by Eichhorn at Leipsic, 1776. In 1780, he completed a translation of seven Arabic poems, known as the *Moallákat*, which obtain their collective name from being 'suspended' in the temple of Mecca; wrote an essay *On the Legal Mode of Suppressing Riots*, and another entitled *Essay on the Law of Bailments*, and two or three odes. In 1783, Mar., Jones obtained a judgeship in the supreme court of judicature in Bengal, and landed at Calcutta in September, having also received the honor of knighthood. He at once set about the acquisition and promulgation of the knowledge of oriental languages, literature, and customs. He established the Royal Asiatic Soc., 'for investigating the history, antiquities, arts, sciences, and literature of Asia,' of which he was the first president. To the volumes of the *Asiatic Researches*, Sir William contributed largely. Besides these, he wrote and published a story in verse, *The Enchanted Fruit, or the Hindu Wife;* and a translation of an ancient Indian drama, called *Sacontala, or the Fatal Ring*. A translation by him of the Ordinances of Menu (q.v.) appeared 1794. He was busily employed on a digest of the Hindu and Mohammedan laws, when he was attacked with an inflammation of the liver, which terminated fatally. The E. India Company erected a monument to his memory in St. Paul's Cathedral, and a statue in Bengal. He had vast learning, knowing well thirteen languages and twenty-eight others partially. As a writer he had not the originality that pertains to genius. A complete edition of his works, 6 vols. 4to, was published by Lady Jones 1799; and another appeared, 13 vols. 8vo, 1807, with a life of the author by Lord Teignmouth.

JONESBORO, *jōnz'bŭr-ō*, Ark., city, county-seat of Craighead County; on the Kansas City, Ft. S. & M., the St. Louis S. W., and the Jonesboro L. E. R.R.'s; about 120 miles northeast of Little Rock. It was first settled in 1870, although some settlements had been made earlier on farms in the vicinity. It was incorporated in 1882. It is situated in an agricultural and lumbering region, and the railroad facilities make it the trade centre for quite an extent of country. The chief manufactures are flour, lumber, staves and headings, boxes and wagons. In addition to the manufactures there is considerable trade in grain, live stock, and some dairy products. Pop. (1910) 7,123.

JONESBORO, Ga., city, county-seat of Clayton County; on the Central of Georgia railroad; about 16

miles south of Atlanta. It is situated in a fertile agricultural region, but its nearness to Atlanta and lack of water power are hindrances to manufacturing. Its chief trade is in fertilizers, cotton, and farm products. At this point, August 1864, was fought a hotly contested battle with Gen. Howard of Sherman's army, in command of the Federal troops, and Gen. Hardee of Hood's army, in command of the Confederates. See JONESBORO, BATTLE OF.

JONES'BORO, BATTLE OF: 1864, Aug. 31, at Jonesboro, cap. of Clayton co., Ga., 20 m. s. of Atlanta; between a Union force under Gen. Oliver O. Howard, detached from Gen. Sherman's army, and a Confederate force under Gen. William J. Hardee of Gen. Hood's army. The object of the Union forces was to compel or at least hasten the evacuation of Atlanta by seizing the Macon and Western railroad at Jonesboro. Hood became aware of Sherman's design, and sent Hardee to oppose Howard's attempt. Howard reached the railroad first and intrenched. As soon as Hardee came up, he attacked Howard, and after an engagement of two hours he withdrew with a loss of 1,400 in killed and wounded. The Union loss was comparatively slight on account of the intrenched position. Atlanta was evacuated Sep. 1.

JONESIA, *jo-nēz'ĭ-a:* genus of trees of nat. ord. *Leguminosæ,* sub-ord. *Cæsalpinieæ,* having a two-leaved calyx, a funnel-shaped, 4-fid corolla, seven stamens attached to a ring which springs from the tube of the corolla, a scimiter-shaped pod. The leaves are abruptly pinnate. The Asoca of Sanskrit poetry (*J. Asoca*) is one of the loveliest trees of the East. Its orange and crimson flowers grow in graceful racemes. Indian poetry abounds in its praises.

JONQUIL, or JONQUILLE, n. *jŏn'kwĭl* [F. *jonquille,* a jonquil—from Sp. *junquillo*—from L. *juneus,* a rush]: a species of *Narcissus* (q.v.) or daffodil, having long lily-like leaves and spikes of yellow or white flowers. The COMMON JONQUIL (*N. Jonquilla*), native of s. Europe, is one of the most common bulbous-rooted plants in flower-borders. It has from two to six yellow flowers at the summit of its scape (leafless stem). It is of nat. ord. *Amaryllidaeeæ.* The SWEET-SCENTED JONQUIL (*N. odorus*), also native of s. Europe, is another species generally cultivated. Perfumed waters are made from *Jonquil* flowers.

JONSON, *jŏn'son,* BEN; English dramatist: 1573–1637, Aug. 6; b., according to the most probable accounts, at Westminster (though one authority says Warwickshire). He usually abbreviated his Christian name, and it so appears in his famous epitaph. The Scottish poet Drummond of Hawthornden, states that Jonson told him his grandfather was a Scotchman of

Annandale, who settled in Carlisle, and his father a clergyman, who died before Ben was born. The latter received his education at Westminster school, where he had for his preceptor the illustrious Camden. Little is known of his career from this point until the period when he became famous as an author. It is said that his mother took a second husband, a bricklayer (but this is doubtful), and that Ben was forced to assist his stepfather. The story of his residence (for a few months) at St. John's College, Cambridge, may be an authentic tradition, but it really rests on no better evidence than the present of some books now in the library of that college with his name inscribed on them. If he went thither at all, he soon returned home for lack of means; but his antipathy to the trade of a bricklayer was so great, that he finally ran off, and served as a soldier in the Low Countries. After coming back to England, he tried the profession of an actor, but did not succeed, whereupon he started as a writer for the stage. Even in this capacity he did not rapidly acquire reputation. The first piece that procured him a name was *Every Man in His Humor* (1598). The best of his subsequent productions are *Volpone, or the Fox* (1605), *The Silent Woman* (1609), and *The Alchemist* (1610). These are comedies full of rich, dry, carefully-elaborated 'humor.' He also composed two tragedies, *Sejanus* (1603) and *Catiline's Conspiracy* (1611), on which he—but only he—set a high value. His *Masques*, written for the courts of James and Charles, are occasionally very graceful. For many years Jonson was in receipt of a pension from these monarchs, but his careless and profuse habits involved him constantly in difficulties, and he died in poverty. Jonson's writings are not much relished now, and never were, even in his own day. There is an air of pedantry about his happiest efforts that spoils their effect. Yet, on the other hand, he has a rude force, and a humor which, if heavy and saturnine, is also genuine and pungent. Occasionally, too, his lyrics show a lightness and delicacy almost inexplicable, considering the ordinary cumbrous movement of his faculties. The influence which he exercised over the wits of his time is a proof of the general strength and talent of the man. Shakespeare alone was reckoned his match in those wit-combats held at the Mermaid Tavern. He was self-reliant, passionate, combative, far from regular in life. He was an immense drinker, and his potations do not seem to have improved either his temper or his constitution. The best edition of his works is that by Gifford, accompanied by a biographical memoir (Lond. 9 vols. 1816; new ed., with introd. and appendices by Lieut. Col. F. Cunningham, 1875). Consult the *Life* by Symonds (1886); Swinburne, *Study of Jonson* (1889); Fleay, *English Drama*

(1891); Koeppel, *Quellen-Studien zu den Dramen Ben Jonsons* (1895).

JOPLIN, *jŏp'lĭn:* Mo., city and one of the county-seats of Jasper County, in the southwestern portion of the State. It is the metropolis of the richest zinc and lead mining camp in the world and the largest city in Jasper County or southwest Missouri. The county of Jasper in which it is located, is the richest county in the State of Missouri in surplus products. The larger portion of this surplus is derived from the zinc and lead mines in and around the city of Joplin. Joplin is only six miles from the eastern line of the State of Kansas and about ten miles north of the Indian Territory. It was first settled in 1870 by native American citizens, and was organized as a city in 1873. The city government is composed of a mayor and city council, who are alternately elected annually; the mayor being elected every two years. There are five railroads entering Joplin at the present time as follows: Missouri Pacific; St. Louis & San Francisco; Missouri Kansas & Texas; the Kansas City Southern; and the Arkansas, Missouri & Kansas Ry. There are six banks, four of which are State banks, and the other two national banks, all having a combined capital of $400,000, with deposits amounting to $2,500,000 annually. The chief business of the city is zinc and lead mining. There are a number of large foundries and other industries supported by the zinc and lead industry. Joplin has a very fine system of public schools, consisting of a high school and 14 other graded schools. It has a Carnegie public library (cost about $50,000); a United States government building (cost $150,000); a county circuit court-house, a Y. M. C. A. building, and a public hospital, and is well supplied with churches. Pop. (1910) 32,073.

JOPPA, *jŏp'a:* name in the Greek of the New Testament of a town called in Hebrew *Yafo;* modern, *Yafa* or *Jaffa,* i.e., beauty. It is on the sea-coast of Syria, about 33 m. n.w. of Jerusalem, and, according to Stanley, still deserves its name. Joppa is of great antiquity. Here, according to the classical myth, it was that Andromeda was chained to the rock, and exposed to the sea-monster; a story that has been supposed to shadow out in an obscure way the early intercourse between Greece and Syria. In sacred history, it appears as the port of Jerusalem in the time of David and Solomon. It was at Joppa that the Apostle Peter saw the vision which corrected his Jewish prejudices concerning the Gentiles and the spirit of Christianity. In the reign of Constantine the Great, Joppa was made a bishop's see, but it attained its highest prosperity in the times of the Crusades, when it became the principal landing-place of the warriors of Christendom. In 1799, it was stormed by the French under

Bonaparte, and here was perpetrated his shameful massacre of Turkish prisoners. In 1832, Mohammed Ali made himself master of it; but the Turks, with the assistance of the British and Austrians, took it from him again 1840. The imports have a value of more than $500,000 a year; the exports (soap, grain, and oranges), about $1,000,000. Joppa contains English, French, German, and U. S. consulates. Since 1869, a German colony has been established here and has built two villages near the town. Pop. about 30,000.

JORDAN, or JORDEN, n. *jŏr'dn* [*OE. jordanis*—from Sw. *jord,* earth: *jordan* meaning literally an 'earthen pot']: a pot or vessel used formerly by physicians and alchemists, something like a soda-water bottle, but with a wider neck; a chamber-pot. *Note.*—JORDAN is also said to have its origin from the river *Jordan* of Palestine, L. *Iŏrdānēs,* Gr. *Iŏrdānēs,* arising from the fact that pilgrims to the Holy Land were formerly in the habit of bringing bottles of water from the Jordan for baptismal purposes. JORDAN ALMONDS, n. sweet almonds.

JORDAN, *jawr'dan:* largest river in Palestine, meaning in Hebrew 'descender' or 'swift-flowing,' in Arabic 'the great watering place'; rising by three sources in the n. extremity of the Palestine, flowing nearly s., passing through Lake Merom (modern Huleh) and the Sea of Galilee or Lake of Tiberias, tortuously traversing about 200 m., leaping over 27 considerable rapids, and emptying into the Dead Sea after a total fall of about 3,000 ft. from Hasbeiya, and 2,450 feet from Banias. The total length from Banias to the Dead Sea is 104 m. direct; the average width 90 to 150 ft.; Lake Huleh is 7 ft. above sea level and the Sea of Galilee 682.5 ft. below; hence the greater part of the river has the singularity of being several hundred ft. below sea-level. Its sources are (1) the *Leddan* or Little Jordan of Josephus, which proceeds from the largest pool or fountain in Syria, at the base of the hill Tell-el-Kady, at the s. end of Mt. Hermon, about 650 ft. above sea-level; (2) the *Baniasy,* having its origin in the cave at Banias, the ancient Cæsarea Philippi, 1,080 ft. above sea-level; (3) the *Nahr Hasbany,* rising at Hasbeiya, on Mt. Hermon, 12 m. n. of Tell-el-Kady, which is the narrowest and longest of the three, and rises at the highest elevation, 1,700 ft. above sea-level. The Leddan and Baniasy unite after flowing about 5 m., and the Nahr Hasbany joins the stream in the marshy plain of Huleh. In the flow of 12 m. to Lake Huleh the river falls 1,000 ft., and from the lake (4 m. long) to the Sea of Galilee (12½ m. long) 10½ m., there is a further fall of 682 ft. The principal tributaries are the Hieromax and Jabbok on the e., and

the Jalud and Faria on the w. The mouth of the Jordan is 540 ft. wide and 1,312 ft. below sea-level.

JORDAN, CONRAD N.: American financier: b. New York 1830, April 20; d. there 1903, Feb. 26. He entered a printing office, but soon exchanged this for a banking establishment, was cashier of a New York bank in 1864-80, and in 1880-4 was treasurer of the New York, Ontario and Western railroad. In 1885-7 he was treasurer of the United States, and introduced in the accounts of the treasury a revised form of debt and cash statements. He was an organizer of the Western National Bank of New York, and for a time its president. In 1893, at the recommendation of all important New York banks, he was appointed assistant United States treasurer in New York, and this post he held until his death.

JORDAN, DAVID STARR, PH.D., LL.D.: American college president and naturalist; b. Gainesville, N. Y., 1851, Jan. 19. He was graduated from Cornell University in 1872 and was instructor in botany there 1871-2. He was professor of natural history at Lombard University, Ill., 1872-3, and taught the same subject in the Indianapolis High School, 1874-5. From 1875 to 1879 he was professor of biology at Butler University, Indianapolis; professor of zoology at Indiana University 1879-85, and president of the last-named institution, 1885-91. Since 1891 he has been president of Leland Stanford Junior University. Besides innumerable scientific monographs and reports, among which may be named *Synopsis of the Fishes of North America* with C. H. Gilbert (1882); enlarged in 1896 with title *Check List of the Fishes and Fish-Like Vertebrates of North and Middle America;* and *Report of Fur Seal Investigations;* he has published *Science Sketches* (1896); *Footnotes to Evolution* (1898); *Imperial Democracy* (1899); *Matka and Kotik; Care and Culture of Men; The Innumerable Company; Animal Life; Animal Forms* (with Kellogg and Heath); *The Strength of Being Clean; Standeth God Within the Shadow; The Philosophy of Despair* (1902); *The Blood of the Nation* (1902); *Food and Game Fishes of North America—A Guide to the Study of Fishes* (with Evermann, 1905); *Voice of the Scholar;* etc. He was president of the California Academy of Sciences 1896-8 and 1901-3, and has been commissioner in charge of the United States Fish Commission investigations in the Pacific ocean from 1901, and of the salmon investigations for Alaska from 1903.

JORDAN, ELIZABETH GARVER: American journalist; b. Milwaukee, Wis., 1867, May 9. She is editor of *Harper's Bazaar* and has published *Tales of the City Room* (1898); *Tales of the Cloister* (1901); *Tales of Destiny* (1902); *May Iverson, Her Book* (1904); etc.

JORDAN, THOMAS: American soldier; b. Luray, Va., 1819, Sept. 30; d. New York 1895, Nov. 27. He was

graduated from West Point in 1840; and distinguishing himself in the Mexican War, was promoted captain in March, 1847. He was stationed on the Pacific coast 1856-60, during which time he introduced steam navigation above the Dalles, on the Columbia river. He served in the Confederate army during the Civil War and was promoted brigadier-general for gallantry at the battle of Shiloh. In 1869 he went to Cuba, where he was made chief of the general staff of the insurgent army and soon afterward commander-in-chief of the revolutionists, winning a battle at Guarmaro in January, 1870. In the following year he resigned and settled in New York, where he became editor of *The Financial and Mining Record.* He published *Campaigns of Lieutenant-General Forrest* (with J. B. Pryor, 1868).

JORDAN, William George: American journalist; b. New York 1864, March 6. He was graduated at the College of the City of New York; and became managing editor of the *Ladies' Home Journal* in 1897; was editor of *The Saturday Evening Post* in 1898-9, and since 1905 has edited *The Searchlight.* He has published *Mental Training by Analysis, Law and Analogy; Mental Training a Remedy for Education; the Kingship of Self-Control;* and *The Majesty of Calmness* (1900); *The Power of Truth* (1902); etc.

JORDANES, *jor-dā'nēs,* or Jornandes, *jor-năn'dēz:* historian of the Gothic nation; about the middle of the 6th c.; by birth a Goth, or both of Alan and of Gothic descent. He was first a notary, but afterward became a monk, and is supposed by some to have been made Bishop of Croton, in Italy, but of this there is no certain evidence. He wrote two historical works in the Latin language; the first, *De Regnorum ac Temporum Successione,* is a short compendium of the most important events in history from the creation to A.D. 552; but the work is valuable only from its accounts of several barbarous northern nations. His other work, *De Getarum Origine et Rebus Gestis* (Concerning the Origin and Deeds of the Goths), has obtained great renown, chiefly as our only source of information about the Goths and other barbarian tribes, except when they are casually mentioned by some Greek or Latin historian. The work is, however, full of inaccuracies, both of time, place, and person; and it is evidently based upon, or copied from, the 12 lost books of the Roman senator Cassidorius. There are many editions of both works.

JORGENSEN, *yor'gĕn-son,* Jorgen: Danish adventurer; b. 1779, Copenhagen; son of a watchmaker. Having previously visited Iceland in a ship in which he held the position of interpreter, Jorgensen arrived at Reikiavik in the *Margaret and Ann,* an armed merchantman from London, carrying 10 or 12 guns, 1809, June 21. A few days later he, with armed followers, surrounded the house

DAVID STARR JORDAN.

of the governor, took him prisoner, and informed the townspeople that he should hold Iceland in possession for England, 'until such time as the English fleet should relieve him.' He then issued several proclamations, and organized a 'government office,' confiscating all Danish property, with whatever else he could lay hands on, *to the state chest,* and subjecting the inhabitants to an unscrupulous despotism. On Aug. 9 his brief reign was ended by the arrival of a British man-of-war, the commander of which, hearing of the piratical invasion of Jorgensen, immediately seized and imprisoned him, and restored the previous condition of affairs. Jorgensen was carried to England, but seems to have escaped the punishment that he merited. He lived in London for some years, was convicted of robbery 1820, and transported to Botany Bay 1825.

JORIS (or GEORGE), DAVID. See ANABAPTISTS.

JORULLO, *chō-rôl'yō:* volcanic mountain in Mexico, 150 m. w.s.w. of the City of Mexico; thrown up, 1759, Sept., to the height of 1,375 ft. from a plain, which itself was 2,890 ft. above the level of the sea; lat. 19° 10′ n., long. 101° 2′ w. This new elevation originally consisted of a series of cones of various sizes. Many of the subordinate eminences have since disappeared; some have changed their form; and few now emit vapor. The temperature of the surface has gradually declined, and much of the locality has been covered with forest trees.

JORUM, n. *jōr'ŭm* [Sw. *jord,* earth—properly meaning an earthen pot: a colloquial and slang word]: a large drinking vessel; its contents; a full bowl.

JOSEFFY, *yo-sĕf'ĭ,* RAFAEL: pianist; b. Pressburg, Hungary, 1852. He manifested a genius for music while a child, and was carefully trained for a pianist. Acquiring a delicate touch and a sympathetic execution, he became a favorite with the musical public at his first appearance, and has since attained widespread fame in Europe and America. By many he has been greeted as the worthiest successor of Liszt. For several years he was a professor in the National Conservatory at New York, where he resided from about 1880. As a virtuoso he evinces great facility and technical finish, and won particular recognition through his interpretation of Chopin. His compositions include: *Ungarisches Album* (6 works for pianoforte); *Die Mühle* (op. 23); a *Marche Turque;* and *Conzert-Studien nach Chopin.*

JO'SEPH I., Emperor of Germany: 1678, July 26—1711, Apr. 17 (King of Hungary 1689, King of the Romans 1690, Holy Roman Emperor 1705-11); b. Vienna; eldest son of Leopold I. The influence of the Prince of Salm, who had the charge of his education, and his subsequent connection with Prince Eugene, led him to opinions much more liberal than those which have prevailed in his family, and he granted privileges to the Protes-

tants of Hungary and Bohemia which had been refused by his predecessors. He also concluded a treaty 1707 with Charles XII. of Sweden, by which he granted religious liberty to the Protestants of Silesia, and restored to them 120 churches which had been taken from them by the Jesuits. He was fond of courtly ceremonial, but mild and affable, and sought to improve the condition of the peasantry in his dominions by relieving them from some of the oppressions to which they were subject. He eagerly and successfully prosecuted, in alliance with Britain, the war of the Spanish Succession against France.

JO'SEPH II., Emperor of Germany: 1741, Mar. 13—1790, Feb. 20 (King of the Romans 1764, Holy Roman Emperor 1765-90); b. Vienna; son of Emperor Francis I. and Maria Theresa (q.v.). He was born at a time when his mother's fortunes were in their lowest depression. He early gave proof of excellent abilities. After the peace of Hubertsburg, he was elected king of Rome, and after the death of his father (1765, Aug. 18), emperor of Germany. Maria Theresa also associated him with herself in the government of the Austrian states; but for some time his actual share in it amounted to little more than the chief command of the army. On her death 1780, he inherited all her dignities and power. He was ambitious of increase of territory, and although he failed to add Bavaria to the Austrian dominions, which he thought to consolidate by obtaining Bavaria in exchange for the Low Countries, yet he was successful in acquiring Galicia, Lodermia, and the county of Zips, at the first partition of Poland 1772; and he appropriated 1780 great part of the bishoprics of Passau and Salzburg. He was a zealous reformer, having imbibed, like Frederick the Great, the principles of the philosophy which prevailed in that age, but he attempted his reforms too rashly, and too much by mere authority, and was compelled to restore many things to their former condition; the hostility of the nobles and clergy, whose power and privileges he sought to reduce, producing rebellions in various parts of his dominions. The clergy in particular regarded him with detestation. He had early shown a dislike to them, which caused no little vexation to his mother; and as soon as he received full possession of the government of Austria, he declared himself independent of the pope, and prohibited the publication of any new papal bulls in his dominions without his *Placet regium*. The continued publication of the bulls *Unigenitus* (q.v.) and *In cœnâ Domini* (q.v.) also was prohibited. Besides this, he suppressed no fewer than 700 convents, reduced the number of the regular clergy from 63,000 to 27,000, prohibited papal dispensations as to marriage, and 1781, Oct. 15, published the celebrated *Edict of Toleration*, by which he allowed the free exercise of their religion to the Protestants and Not-united Greeks in his dominions. Pope Pius VI. thought to check

this course by a personal interview with the emperor, and for that purpose visited Vienna 1782; and though he was quite unsuccessful in his object, he carried away with him the conviction that the people were utterly unprepared for the reforms which their sovereign sought to accomplish, a conviction proved by the event. Joseph engaged in a war with Turkey 1788, in which he was unsuccessful; and the vexation caused by this, and by the revolts in his own dominions, and the necessity under which he felt himself of revoking many of the edicts by which he had sought to promote the welfare of his people, hastened his death. He founded many valuable institutions, and did much to promote arts, manufactures, and commerce in Austria.

JO'SEPH, King of Naples. See BONAPARTE (JOSEPH).

JOSEPH, SAINT: the husband of Mary the mother of Jesus Christ, was a descendant of the house of David, born at Bethlehem, but resident at Nazareth, where he practiced the trade of a carpenter. Tradition and art represent him as an old man at the time of Christ's birth, and he is said to have died before the beginning of Christ's public ministry. His day in the Roman Catholic calendar is March 19.

JOSEPH: a son of the patriarch Jacob by his favorite wife Rachel. His father's preference for him and his own relation of dreams which predicted his future exaltation above those of his household drew upon him the envy of his brothers, who sold him to Ishmaelitish and Midianite slave-dealers, by whom he was sold to Potiphar, a captain of the guard in Egypt. The story of his condemnation to prison on the false accusation of Potiphar's wife, of his release and subsequent elevation to the position of vice-regent of Egypt, and the final settlement there of his father and brothers, is related in the Book of Genesis. Authorities still differ as to the period in Egyptian history to which Joseph's life belongs, but the majority agree in placing it under the Hyksos or shepherd kings.

JOSEPH OF ARIMATHÆA: member of the Jewish Sanhedrim, who believed in Jesus, but had not the courage to make profession of faith. He was born in Rathaim, a city of Benjamin, near Lydda. After the crucifixion he went to Pilate, begged the body of Jesus, wound it in fine linen and buried it in his own new tomb. According to tradition he came as apostle to Glastonbury, England. His day is March 17 in the Roman Catholic calendar, and July 31 in the Greek Church.

JOSEPHINE, *jō-zė-fēn'*, F. *zhō-zā-fēn'*, MARIE ROSE, Empress of the French: 1763, June 23—1814, May 29; b. at Trois Islets, in the island of Martinique, where her father, Joseph Tascher de la Pagerie, was captain of the port at St. Pierre. She had only a meagre colonial education; but her qualities of mind and heart, even more

than her beauty, won universal regard. When about 15 years of age, after matrimonial negotiations between her family and that of the Beauharnais, her father brought her to France; and 1779, Dec. 13, she married the Viscount Alexandre Beauharnais; of which marriage were born Eugene, Viceroy of Italy, and Hortense, Queen of Holland, who was mother of Emperor Napoleon III. Josephine's husband conceived a jealousy of her, and sought a legal separation, which he failed to obtain. Josephine went back to her parents, but after two years returned to her husband at his request (1790) when the Revolution had broken out. During the Reign of Terror he suffered death, and Josephine barely escaped through the events of 9th Thermidor (1794, July 27). Afterward she was reduced to great straits. Having occasion to visit Napoleon Bonaparte to thank him for restoring to her the sword of her husband, she greatly impressed him with her beauty and sweetness of manner; and the result was their marriage 1796, March 9. She accompanied him in some of his campaigns, and exercised a great influence in restraining him from measures of violence and severity. At Malmaison, and afterward at the Luxembourg and the Tuileries, she attracted round her the most brilliant society of France, and contributed not a little to the increase of her husband's power. She regarded his exaltation to the throne, however, with a presentiment of evil; and from the day of her becoming empress, seemed to dread that political motives might lead him to seek the dissolution of a marriage which had not been blessed with children. After scenes of the most painful kind, this took place: the marriage was dissolved by law 1809, Dec. 16. Josephine retained the title of empress, corresponded with Bonaparte, and if the allied sovereigns had permitted, would have rejoined him after his fall. She lived near Evreux. See Aubenas, *Histoire de Josephine* (1859); the *Mémoires de Madame de Réimusat* (3 vols. Paris 1879-80; Eng. trans. 1880); Ober, *Josephine, Empress of the French* (1901).

JOSEPHUS, *jō-sē'fŭs*, FLAVIUS: celebrated historian of the Jews; b. Jerusalem, between A.D. 37, Sep. 13, and 38, March 16; d. some time after A.D. 100. He was of both royal and sacerdotal lineage; descended, on the mother's side, from the line of Asmonean princes, while his father, Matthias, officiated as a priest in the first of the 24 courses. The careful education that he received developed his brilliant faculties at an unusually early period, and his acquirements in Hebrew and Greek literature—his two principal studies—soon drew public attention. Having successively attended the lectures at the paramount religious schools of his time—'sects,' as he inaccurately terms them—he withdrew into the desert, to a man whom he calls Banos, conjectured to have been either a follower of John the Baptist or an Essene. Three years later, at the age of 19, he returned to Jerusalem,

and thereafter belonged to the body of the 'Pharisees,' which comprised the bulk of the people. So great was the regard for his abilities, that at the age of only 26 years he was chosen delegate to Nero. When the Jews rose in their last and fatal insurrection against the Romans, Josephus was appointed gov. of Galilee. Here he showed great valor and prudence; but the advance of the Roman general Vespasian (A. D. 67) made resistance hopeless. The city of Jotapata, into which Josephus had thrown himself, was taken after a desperate resistance of 47 days. With some others he concealed himself in a cavern, but his hiding-place was discovered, and being brought before Vespasian, he would have been sent to Nero, had he not—according to his own account, for Josephus is his own and sole biographer—prophesied that his captor would yet become emperor of Rome. Nevertheless, he was kept in an easy imprisonment about three years. Josephus was present in the Roman army at the siege of Jerusalem by Titus; and after the fall of the city (A. D. 70), was instrumental in saving the lives of some of his kindred. After this, he appears to have resided at Rome, busied in literary studies and labors. The exact period of his death is not ascertained. It is known only that he survived Agrippa II., who died A. D. 100. He was thrice married, and had children by his second and third wives. His works are: *History of the Jewish War*, 7 books, in both Hebrew and Greek (the Hebrew version is no longer extant); *Jewish Antiquities*, 20 books, containing the history of his countrymen from the earliest times till the end of the reign of Nero (the fictitious Hebrew *Josippon*, translated into Arabic, Latin, German, and English, which for 900 years, and till recently, was identified with Josephus's *Antiquities*, is now known to date from the 10th c.); treatise on the *Antiquity of the Jews*, against Apion, 2 vols., valuable chiefly for its extracts from old historical writers; and *Autobiography* (A. D. 37-90), which may be considered supplementary to the *Antiquities*. The other works attributed to him are not believed to be genuine.

The peculiar character of Josephus is not difficult to describe. He was, in the main, honest and veracious; he had a sincere liking for his countrymen, and more pride and enthusiasm in the old national history than he could well justify; but the hopelessness of attempting to withstand the enormous power of the Romans, and an aversion to martyrdom, caused him to side with the enemy:—perhaps in the faint hope of being thus of some use to the national cause. From Vespasian he received honors and estates which were confirmed to him under Titus and Domitian. Despite this humanity which secured the safety of many Jews after the fall of Jerusalem, he was often slandered by his coreligionists. The influence of Greek philosophy and learning is visible in all his writings, and, as far as biblical history is concerned, infused

into it a tone of 'rationalism,' an unconscious reflection of the pagan thought around him. He speaks of Moses as a human, rather than a divinely inspired lawgiver; he doubts the miracle in the crossing of the Red Sea; the swallowing of Jonah by the whale; and, generally speaking, whatever is calculated to teach that there was a special miraculous Providence at work concerning the chosen people. His style is easy and elegant, and Josephus has often been called the Greek Livy. While he is the earliest apologist of Judaism and did much to check the anti-Semitism of his day in Rome, it is curious that his works were rescued by the Christian church. Many recent writers on Josephus can be mentioned—Siegfried, Bloch, Freudenthal, Posznanski, Gfrörer, etc. The *editio princeps* of the Greek text appeared at Basel (Froben) 1544. Since then, the most important editions (with notes) are those of Hudson (Oxford 1720), Havercamp (Amst. 1726), Oberthür (Leip. 1782-85), Richter (Leip. 1825-27), and Dindorf (Paris 1845). Josephus has been frequently translated; the two best known versions in English are by L'Estrange (Lond. 1702) and Whiston (Lond. 1737).

JOSHUA, *jŏsh'ū-ā* [Heb. *Yehoshua*, 'Jehovah helps']: celebrated Hebrew warrior, lieutenant and successor of Moses, under whose leadership the land of Canaan was conquered: b. in Egypt; son of Nun, of the tribe of Ephraim. Before the Israelites had reached Sinai, he was chosen by Moses to command the troops that fought against Amalek; and shortly before the death of the great lawgiver, he was publicly invested by the latter with the whole civil and military government of the Israelites. The vigorous and, on the whole, successful manner in which he pursued the conquest of Canaan, and distributed the land among the tribes, is minutely described in the book which bears his name. He died at the age of 110, and was buried at Timnath-Serah, in Ephraim.

JOSHUA, Book of: one of the canonical books of the Old Testament; a continuation of the Pentateuch; containing an account of the conquest and division of the 'Land of Promise.' The writer is unknown; but large portions show by their minute details that they are from the hand of one who lived at the period described; also such passages as that relative to the harlot Rahab—'and she dwelleth in Israel unto this day' (vi. 25)—demonstrate their own antiquity. Nothing can be adduced against the conjecture that the main portions were written by the hand, or under the eye of Joshua himself. On the other hand, such passages as the narrative of the capture of Hebron, which did not take place till after the death of Joshua; the frequency of the expression, 'unto this day,' in connections that forbid us to suppose the interval a brief one; the allusion to Judah and Israel as distinct (xi. 21); the lateness of many of the grammati-

cal forms, etc., clearly indicate the addition of portions to the book by a later hand, which may probably have been in the reign of Saul or of David, and to which may have been added a further supplement, with a general revision, by a compiler in the time of Manasseh. A Samaritan Book of Joshua *(Chronicon Samaritanum)*, containing a chronological narrative of events from the death of Moses to the time of the Roman emperor Hadrian, compiled from Arabic and Hebrew sources, about 1300, is extant in Arabic, and was edited first at Leyden 1848, by Juynboll, with a Latin version. It differs considerably from the canonical Book of Joshua, of which it is a revision, with Samaritan fables added. The contents of the book may be divided into three parts: the conquest of Canaan; the partition of the land among the 12 tribes; and the parting address made by Joshua to the assembled people. The first part is a narrative of the manner in which Joshua prepared to cross the Jordan at the head of the Israelites. The miraculous passage of the Jordan is accomplished, circumcision is performed, and the Passover observed on the soil of the Promised Land. Jericho and Ai are captured; the covenant confirmed at Ebal and Gerizim; the Gibeonites secure a treaty of peace through guile. The decisive battle of Bethhoron ends in the rout of the leagued kings. The second part is topographical and statistical, gives a general view of the land, with some account of its apportionment, and the setting aside of the Cities of Refuge. The third and concluding section is in the style of Deuteronomy. The people are exhorted to remain faithful to Jehovah, to eschew idolatry, and at Shechem, to which place the bones of Joseph had been brought, the covenant is renewed. The death and burial of Joshua and Eleazar make up a narrative which closes the book.

JOSIAH, *jō-sī'ah* (Heb. *Yoshiyahu,* 'Jehovah will help'), King of Judah: B.C. 649-610 (reigned B.C. 641-610); son of Amon and Jedidah. He succeeded his father at the age of eight years. He was apparently brought up under the care of the priesthood, early manifested a pious disposition, and became a determined religious reformer, purging Judah and Jerusalem from idolatry, and even dealing in like manner with the land of Israel, which for more than a hundred years had been a loosely governed portion of the Assyrian empire, and whose Israelitish people had been largely carried into exile, and their place supplied by heathen colonists. In the reign of Josiah, Hilkiah the high priest found the *Book of the Torah* (Law)—by which some understand Deuteronomy, others Exodus, and others (improbably) the whole Pentateuch—while the workmen were repairing the temple after perhaps 200 years of neglect. Josiah does not appear to have known of the book before; at least, the words of it excite in him a sense of the guilt of his nation and a deep fear of Divine anger against the long

continued disobedience and neglect of the ancient law. So the king summoned his people and observed the feast of the Passover after the manner of the fathers, with a dignity and splendor unequalled for a long period before. After this, he continued his work of extirpating every trace of idolatry. Wizards, conjurors, 'all the abominations' that could be 'spied in the land,' were 'put away.' In these efforts, the monarch seems to have spent the greater part of his reign. He met his death after a reign of 31 years, at Megiddo, in the valley of Esdraelon, when attempting to check the advance of Pharaoh Necho through his kingdom against the Assyrians. (Compare *Herod.* II. 159.) Josiah was the last of the good kings of Judah. In his days prophesied Jeremiah and Zephaniah.

JOSIKA, *yō'shē-kŏh,* MIKLÓS (NICHOLAS), Baron: greatest Hungarian novelist: 1794, Apr. 28—1865, Feb. 27; b. Torda, Transylvania; of a distinguished and wealthy family. In his youth, he served in the Austrian army, but resigned his commission 1818, married a Hungarian heiress, and for many years applied himself to agriculture and study. This marriage was not happy, and ended in a separation. After 29 years, he became a Protestant, obtained a divorce, and married a second time, living in this union happily till his death. His first works appeared 1834 under the titles *Irány* and *Vázlatok,* and were exceedingly popular. From that period till the revolution in 1848, he wrote about 60 vols. of novels, all published at Pesth. The most important are *Az utolsó Bátóry* (The Last Bátóry, 3 vols. 1840), *Zrinyi a Költö* (The Poet Zrinyi, 4 vols. 1843), *A Csehek Magyarországban* (The Bohemians in Hungary, 4 vols. 1845), and *Jósika István* (Stephen Josika—one of the author's ancestors—5 vols. 1847). Involved in the Hungarian revolution, he was compelled to abandon his native country, and afterward resided at Brussels, where he continued his literary labors. In 1864, he removed to Dresden, where he died. Among his productions in exile, are *Egy Magyar Családa forradalom Alatt* (A Hungarian Family during the Revolution); *The Mailly Family;* and *Ezter* (Esther). Josika is a thoroughly national novelist, and drew his materials almost wholly from the history of his own land, of which he had profound knowledge. He has been called the Walter Scott of Hungary. Many of his novels have been translated into German.

JOSS, n. *jŏs* [Chinese, *joss,* deity, said to be adapted from the Port. *Dios,* God]: in *China,* the Penates or household gods of every family, whose religious worship is that of their ancestors. JOSS-HOUSE, a temple for the worship of Chinese gods and ancestors. JOSS-STICK, *jŏs'stĭk,* a reed covered with perfume, and burned before an idol.—The application of the word *Joss* to the Deity arose through the attempts of Jesuit missionaries in Canton to teach the Chinese the name of God (Lat. *Deus*),

which in Chinese utterance became Joss, and was used in their talk with Europeans in reference to their gods and to God as known by Christians. The joss is usually of wood and decorated in colors, mostly in gold and red. A Chinese upon entering the presence of a joss falls upon his knees, and touches his forehead thrice upon the floor, as a preliminary of worshipping the joss.

JOST, *yōst,* Isaak Markus: 1793, Feb. 22—1860, Nov. 20; b. Bernburg: eminent Jewish scholar of Germany. His principal works are *Geschichte der Israeliten* (History of the Israelites, 9 vols. Berl. 1820-29, his chief work; to which was added a tenth, 1846-49, *Neuere Geschichte der Israeliten von* 1815-45; *Allgemeine Geschichte des Jüd. Volkes* (Universal History of the Jewish People, 2 vols. Berl. 1831-2); a Translation (into German) of the Mishna with text and commentary (6 vols. Berl. 1832-34); *Gesch. des Judenthums,* etc. (3 vols. Leipsic, 1857-59). He also edited a journal *Israelitische Annalen* (Fkf. 1839-41). Besides being a savant, he was a patriot, and warmly interested himself in behalf of the social and political liberties of his countrymen.

JOSTLE, v. *jŏs'l* [OF. *jouster,* to tilt (see Joust)]: to push against rudely; to run against and shake. Jostling, imp. *jŏs'lĭng.* Jostled, pp. *jŏs'ld.*

JOT, v. *jŏt* [Gr. *ītă,* the smallest letter in point of size of the Greek alphabet: Heb. *yod,* the smallest letter of the Heb. alphabet, jot: Dut. *jot;* Sp., It. *jota,* a jot, a tittle]: to note a thing down at once in a memorandum-book as it occurs; to set down: N. the least thing or quantity; a small portion of anything; a tittle; a point. Jot'ting, imp.: N. a memorandum. Jot'ted, pp. *Note.*—Wedgewood connects *jot* with the OE. *to jot,* meaning to touch, jog, or nudge, derived from the Dut. *jotten,* to jolt: prov. Sw. *datta,* a touch: *detta,* to fall, whence, from the connection arising from a short movement and a lump or piece, *jot* is used for a small portion, and he affirms that the resemblance to Gr. *ītă* is accidental: Mackay, again, connects *jot* with Gael. *diod=jŏt* or *jŏd,* a drop, a point.

JOTUNS, *yō'tŭnz,* or Jættens: in Scandinavian mythology, giants who dwelt in forests and caves amid treasures of gold and silver; personifications of evil and malignity. Though they were immense in size and physical strength, they were so feeble in intellect that they were always defeated in the wars that they waged continually on the smaller and weaker but brighter gods of Valhalla. Their home was called Jotunheim, the home of darkness and dullness, and they practiced a kind of witchcraft, vainly hoping thereby to prevail against the more intellectual divinities.

JOUBERT, *zhô-bär',* Barthelemy-Catherine: 1769, Apr. 14—1799, Aug. 15; b. Pont-de-Vaux, France: soldier. He joined the French army 1791, was made a gen. of

brigade on the battle-field 1795, distinguished himself on the Rhine, was praised and sent to Paris with trophies of his victories by Napoleon; and under the order of the Directory was successively commander of the army in Holland, Mentz, and Italy. He invaded the Tyrol, occupied Piedmont and proclaimed the revolution there, secured great quantities of war material in Turin and elsewhere, and contributed largely to Napoleon's successes at Montenotte, Mondovi, and Rivoli. Offended at an order of the Directory he resigned his command early in 1799. After the French disasters in July, he was summoned to take Gen. Moreau's place, and Aug. 15 was attacked by the Russians and Austrians under Souvarow at Novi, and killed while leading a charge.

JOUBERT, *jū'bèr*, PETRUS JACOBUS: a Boer military officer; 1834—1900, March 27; b. in Congo, Cape Colony; settled in the Transvaal; was attorney-general of the republic; acting president, 1874-75 and 1883-84; appointed a member of the Triumvirate of 1880 to conduct war against Great Britain; and com.-in-chief of the Boers in the war that followed. He surprised the British encampment with a small force, 1881, Feb. 27, and won a decided victory. At the beginning of the British-Boer war of 1899-1901 he organized and equipped the Boer army and led it in the fields till his death.

JOUDPORE, *jôd-pōr'*, or JODHPUR, *jōd-pôr'*, or MARWAR, *mâr-wâr':* state in Hindustan; most extensive and populous of all the principalities of Rajpootana; 34,963 sq. m.; revenue about $1,800,000. Joudpore is chiefly within the basin of the Luni; and its central parts, being level and well watered, are highly productive, yielding wheat, opium, tobacco, and cotton. Pop. 1,935,565.

JOUDPORE', or JODHPUR: city in Rajpootana, Hindustan, cap. of the protected state of Joudpore; lat. 26° 19′ n.; long. 73° 8′ e. Besides several magnificent tanks, the place is remarkable for elaborately constructed and deep wells. Pop. 60,437.

JOUETT, *jow'ĕt*, JAMES EDWARD: American naval officer: b. Lexington, Ky., 1828, Feb. 27; d. Sandy Spring, Md., 1902, Oct. 1. He entered the navy in 1841, served during the Mexican War, was graduated from the United States Naval Academy in 1847, in 1861 with a detachment of marines entered Galveston harbor and destroyed the Confederate war-vessel Royal Yacht, and for his services was appointed to the command of the United States steamship Montgomery. As lieutenant-commander, he was prominent in Farragut's entrance of Mobile Bay (1864, August), and in 1885, when in command of the North Atlantic squadron he opened the transit across the Isthmus of Panama, closed by the rebels. He was promoted rear-admiral in 1886, subsequently president of the Board of Inspection and Survey, and in 1890 was retired.

JOUFFROY, *zhô-frwâ'*, THÉODORE SIMON: French philosopher: 1796, July 7—1842, Feb. 4; b. Pontets, a village of the Jura. In youth he began the study of philosophy, and became a teacher of it, and 1832 a prof. in the Collége de France. Lack of health compelled him to resign his professorship 1837. His works consist chiefly of studies of the Scottish philosophy, and he published translations of the works of Reid and some of those of Dugald Stewart with notes and introductions. Of his original works, the most valuable is *Mélanges Philosophiques* (1833). He was known also as a political writer, and 1824 took part in establishing the newspaper *Le Globe.* He was for some time a member of the chamber of deputies.

JOUFFROY D'ARBANS, *zhô-frwâ' dâr-bŏng'*, CLAUDE FRANÇOIS DOROTHÉE, Marquis DE: about 1751-1832; b. Franche-Comté, France: mechanician. He entered the army in early life, was appointed supt. of inf. 1772, and during a subsequent exile in Provence began studying the navigation of sailing vessels. In 1775 he conceived the idea of propelling boats by steam-power, and having familiarized himself with Chaillot's new fire-engine, constructed a small steam propeller, which he exhibited on Doubs river 1776, June. His first experiment was a failure, but he was more successful 1780 and 83, and applied to the govt. for a patent. His application and steam-vessel were referred to the Academy of Sciences, and on its adverse report, the application was refused 1784, Jan. 31. Jouffroy spent some years in England, and after his return to France resumed his experiments, secured his patent 1816, and formed a company to build and operate a new steam-boat. This venture proved unsuccessful, and he retired to the Hôtel des Invalides, where he died. He claimed the discovery of steam navigation, and after his death Arago and the French Acad. recognized it.

JOUISANCE, n. *jô'ĭ-săns* [F. *jouissance,* enjoyment, fruition]: in *OE.,* jollity; merriment.

JOULE, *jôl*, JAMES PRESCOTT, F.R.S., LL.D.: distinguished experimental philosopher: 1818, Dec. 24—1889, Oct. 11; b. Salford, England. In his youth, he had the good fortune to have for instructor in science the celebrated Dalton; and he early constructed for himself electrical machines and other philosophical instruments. His earliest notable experiments were with reference to electro-magnetic engines; from which he passed to quantitative determinations regarding heat, and the transformation of various forms of energy (see FORCE). He is justly entitled to be considered as the experimental founder of the modern theory of conservation of energy —one of the grandest generalizations ever made in physical science. In 1878 a civil list pension of £200 was conferred upon him.

JOULE: The unit of electrical heat energy. It is

equal to the heat loss produced by one ampere flowing through a resistance of one ohm. See ELECTRO-DYNAMICS, and UNITS, SCIENTIFIC.

JOULE'S LAW: Joule's Law enunciates the fact that 'the energy loss in electricity flowing over a wire is equal to the *square* of the current multiplied by the resistance.' Expressed in practical units this is Loss=$1^2$, R 1 being the current in amperes and R the resistance in ohms.

JOURDAN, *zhôr-dŏng'*, JEAN BAPTISTE, Comte: French marshal: 1762, Apr. 29—1833, Nov. 23; b. Limoges, where his father was a surgeon. He early entered the army, embraced with great zeal the cause of the Revolution, and soon rose to the rank of gen. of division. In 1793, Sep., he obtained the command of the Army of the North, and Oct. 16 gained an important victory at Wattignies. In 1794, he commanded the Army of the Meuse and Sambre, and prosecuted the war with great vigor and success. In 1796, he pushed his way far into Germany, but was driven back by Archduke Charles; and this led to his resignation of his command. In 1799, the Directory intrusted him with the command of the Army of the Danube; but he was defeated by Archduke Charles at Stockach. Although he opposed the *coup-d'état* of the 18th Brumaire, the First Consul employed him, 1800, in the reorganization and administration of Piedmont; and on the establishment of the Empire 1804, he was made a marshal and member of the council of state. He accompanied King Joseph to Naples, and afterward to Spain, and in his service he was actively employed as a general. He offered his services to Napoleon after his return from Elba. Louis XVIII. made him a count 1815. In 1819, he was made a peer of France; but his republican principles led him to enter heartily into the revolution of 1830. He lived and died poor.

JOURNAL, n. *jĕr'năl* [F. *journal*, OF. *jornal*, a journal, a newspaper—from mid L. *dĭurnālĕ*, and *jornālĕ*—from L. *dĭur'nŭs*, daily—from *dĭēs:* F. *jour*, a day: It. *giornale*]: account or register of daily transactions and events; a merchant's business-book in which the daily transactions are entered from the waste-book; a ship's log-book; a paper published daily; a newspaper or magazine (see NEWSPAPER); in a *machine*, the neck or bearing part of a shaft that works in a plummer-block, upon which the shaft turns and is supported; that part of the axle on which the weight of a locomotive rests. The journals are situated on the inner side of the wheels, and turn on brass 'journal-bearings' which resist the friction of the revolving axle. The bearings are held in cast-iron or steel boxes called 'journal-boxes' or 'axle-boxes;' ADJ. in *OE.*, every day; daily. JOUR'NALIZE, v. *īz*, to enter in a journal. JOUR'NALI'ZING, imp. JOUR'NALIZED, pp. *-īzd.* JOUR'NALISM, n. *-ĭzm* [F. *journalisme*]: the management of a newspaper; the profession of editing or writing for

journals. JOUR'NALIST, n. *-ĭst* [F. *journaliste*]: one who conducts a newspaper; a newspaper editor; a writer connected with the periodical press. JOUR'NALIS'TIC, a. *-ĭs'-tĭk*, pertaining to journals or journalism: see NEWSPAPER.

JOURNALISM, SCHOOL OF: a college of journalism, endowed by a gift of $2,000,000 by Joseph Pulitzer, editor and proprietor of the New York *World*, to Columbia University, New York, in 1903. With the advance of civilization and general culture and intelligence the demands upon the journalists of the present day are constantly becoming greater, and this college is the recognition of the importance and place of journalism as a profession, and a practical endeavor to equip those who adopt it, by a course of thorough instruction for its exacting and laborious duties. This school is the first institution of the kind in the world.

JOURNEY, n. *jėr'nĭ*, JOUR'NEYS, n. plu. *-nĭz* [F. *journée;* Sp. *jornada*—from mid. L. *jornāta*, a day's work (see JOURNAL)]: travel by land or sea; passage from one place to another. JOURNEY, v. to travel; to pass from one place to another. JOUR'NEYING, imp.: N. a travelling from one place to another. JOUR'NEYED, pp. *-nĭd.* JOUR'NEYER, n. *-nĭ-ėr*, one who travels. JOUR'NEY-MAN, n. *strictly*, a workman hired by the *day*, or for a period; a workman, as distinguished from an apprentice; a mechanic; in *OE.*, a bad or indifferent workman. JOURNEY-WORK, work done by the day; work done for hire. JOURNEY-BATED, in *OE.*, jaded and worn out by travel.—SYN. of 'journey, n.': tour; travel; excursion; expedition; trip; pilgrimage; voyage; passage.

JOUST, n. *jôst* or *jŭst* [OF. *jouste;* F. *joute*, a joust or tilt—from OF. *jouster*, to tilt—from mid. L. *juxtārĕ*, to draw near, then to fight hand to hand: It. *giostrare*, to tilt; Sp. *justa*, a tilt; connected with Eng. JOSTLE]: an encounter on horseback with lances; a mock fight, as at a tournament: V. to engage in a mock fight on horseback. JOUST'ING, imp. JOUST'ED, pp. JOUST'ER, n. one who jousts or tilts.—*Jousts* were exercises of arms and horsemanship, performed in the middle ages by knights and nobles. The combatants engaged one another singly, each against his antagonist, and not in a troop, as in the Tournament (q.v.). The number of courses to be run and strokes to be given was usually three, but sometimes more. The weapon most in use was the lance, but sometimes the battle-axe and sword were used. To direct the lance anywhere but at the body of the antagonist was reckoned foul-play. In the joust of peace, or *joute de plaisance*, a foot encounter preceded the mounted combat. In the 15th c., the usages of jousting had come to differ in different countries to such an extent, that an elaborate treatise was written in explanation of the various modes distinguishing the characteristic differences.

JOUTEL, *zhô-tĕl*, HENRI: b. Rouen, France, abt. 1651,

explorer. He entered the French army at an early age, accompanied Robert La Salle (q.v.) on his exploring expedition to the mouth of the Mississippi river 1684, completed and commanded Fort St. Louis, took part in the second expedition, and was present at the assassination of La Salle 1687, and returned to Rouen 1688. He wrote *Journal historique du dernier voyage, que feu M. de la Sale fit dans le Golfe de Mexique* (Paris 1713).

JOVE, n. *jōv* [L. *Jovis*, or *Jūpĭtĕr:* the Gr. name is *Zeus*]: among the *Romans*, the king of the gods (see JUPITER). JOVIAL, a. *jō'vĭ-ăl* [OF. *jovial*—from mid. L. *jovĭālis*, pertaining to Jupiter, sanguine, jovial]: gay; merry; joyous; expressive of mirth and hilarity—qualities supposed to belong to one born under the influence of the planet Jupiter or Jove. JO'VIALLY, ad. *-lĭ.* JO'VIAL'ITY, n. *-ăl'ĭ-tĭ*, or JO'VIALNESS, n. merriment; conviviality; noisy mirth. JOVIAN, a. *jō'vĭ-ăn*, of or pertaining to Jupiter or Jove. JOVICENTRIC, a. *jō-vĭ-sĕn'trĭk* [L. *Jovis*, genit. of *Jupiter; centrum*, a centre]: in *astron.*, having its centre of attraction on the planet Jupiter; said of its satellites.—SYN. of 'jovial': mirthful; joyous; merry; airy; gleeful; gay; festive; jolly; cheerful.

JOVEITE, *jōv'īt:* a nitro-substitution explosive used in blasting, and as charges for high-explosive shells, which was invented by J. E. Blomen, Washington, D. C. It consists of nitro-naphthalenes 6 to 8 per cent, nitro-phenols, 16 to 30 per cent, and nitrate of soda 64 to 76 per cent. It is made by melting the nitro-naphthalenes in a steam-jacketed kettle, adding the nitro-phenols and continuing the heating until they are melted, and then stirring into this liquid mixture the solid nitrate of soda in a finely ground and perfectly dry condition until each of the solid particles of the nitrate is coated and impregnated with the liquid. On cooling, the particles of the nitrate are protected from deliquescence by the coating of scarcely soluble nitro-substitution compounds, while on explosion, the nitrate causes the reaction to be most complete. For blasting purposes this explosive is used in a granulated condition, but in loading armor-piercing projectiles it is poured into the shell while in the plastic condition and on cooling sets to a hard mass, which completely fills the cavity except for a canal in the centre where the fuse is placed. For blasting purposes the explosive is fired by means of a mercuric fulminate detonator, but the charges in shells are fired by means of gunpowder fuses.

JOVELLANOS, *ċho'vĕl-yâ'nōs* (or JOVE LLANOS), GASPAR MELCHIOR DE: 1744, Jan. 5—1811, Nov. 27; b. Gijon, Spain: lawyer. He was educated in the universities of Oviedo, Alcala, and Avila, first with the view of entering the priesthood, and afterward of practicing law. In 1767, Oct., he was appointed judge of the criminal court of Seville, 1778 was called to Madrid and appointed judge

and alcalde of the royal household and court, and 1780 was raised to the council of milit. orders. In 1787 he prepared his noted work, *Informe sobre un proyecto de Ley Agraria,* and 1790 was virtually banished to his birthplace, because of his intimacy with François Cabbarus, the French financier, who had incurred the enmity of Manuel de Godoy, then powerful at court. The ensuing 7 years were passed in the province of Asturias and chiefly in Gijon, in literary work and in establishing the noted Asturian institution for agricultural, industrial, social, and educational reform. In 1797 he was recalled to Madrid, and tendered the office of minister to Russia, which he declined, and minister of grace and justice, which he accepted. Soon afterward he opposed Godoy's policy and conduct, and was again retired to Gijon, where 1801 Godoy had him arrested, hurried to Barcelona and transported to Majorca. He remained in prison there till 1808, recovering his liberty on the French invasion of Spain. Rejecting brilliant overtures from Joseph Bonaparte after he had gained the Spanish throne, Jovellanos joined the patriotic party and aided in reorganizing the cortes. He returned to Gijon early in 1811, but the advance of the French soon forced him to take refuge in Viga, where he died. His poetical works include the tragedy *El Pelayo,* the comedy *El Delincuente Honrado,* and numerous satires and miscellaneous pieces, and his prose works, beside *Ley Agraria, Elogios,* and *Memorias Politicas.*

JOVIANUS, *jō-vĭ-ā'nŭs,* Flavius Claudius, Roman Emperor: abt. 332-364, Feb. 17 (reigned 363, June 27—364, Feb. 17); b. Singidunum in Mœsia; son of the general Varronianus. As capt. of the life-guards, he accompanied the emperor Julian in the Persian campaign in which the latter was killed 363, June 26, and on the following day, after the venerable Sallust had declined the succession Jovianus was proclaimed emperor by the generals and army. His first care was to extricate his famished and exhausted army from its perilous position in a hostile country, and this he did by continuing the retreat begun by Julian to the Tigris and then surrendering to the Persian king Sapor II. all the provinces beyond it. He then pushed on toward Constantinople, and stopping at Antioch proclaimed himself a Christian, issued an edict re-establishing Christianity and also guaranteeing protection to pagans, and restored Athanasius (q.v.) to the see of Alexandria, from which he had been driven by the Arians. He made another halt at Tarsus to render funeral honors to Julian's remains, reached Ancyra and assumed the consulship with his infant son as colleague 364, Jan. 1, and making a fourth stop at Dadastana, a small town of Galatia, was found dead in bed Feb. 17. Over-eating, burning charcoal fumes, and poison have veen variously assigned as the cause of his

death. He was succeeded by Valentinian and Valens after a 10-days' interregnum.

JOVINIAN, *jō-vĭn'ĭ-an*, or JOVINIANUS, *jō-vĭn-ĭ-ā'nŭs*, or JOVIA'NUS: Roman monk, condemned as a heretic by a synod convened by Pope Siricius A.D. 390, because of his opposition to the prevailing ascetic tendencies. Little is known of his life save what Jerome—who had no personal acquaintance with him—recorded in his bitter polemic *Adv. Jovinianum Libri II.* According to this he was living in Rome A.D. 388, had a large acquaintance with the Scriptures, composed several religious works, and lived the celibate life of an ascetic monk till his 'heretical' change of view, when he became a self-indulgent epicurean. The condemnation by the synod of Pope Siricius was repeated by a synod convened in Milan by Ambrosius, after Jovinian and his followers had taken refuge in Milan. He died between 390 and 406. Some of the 'heretic' views promulgated by Jovinian have been recognized by modern church historians as constituting an important part of the principles of Protestantism. His chief doctrines were (1) that in point of merit there was no difference between virginity, widowhood, and the married state; (2) there was no difference between abstinence from food and thankful enjoyment of it; (3) those who have been regenerated in baptism cannot be tempted by the devil; (4) all who preserve baptismal grace shall receive the same reward in the kingdom of heaven.

JOVIUS, *jō'vĭ-ŭs*, PAULUS (or PAOLO GIOVIO): 1483, Apr. 19—1552, Dec. 11; b. Como, Italy: historian. He was educated by his brother, who desired him to become a physician; and after studying the humanities and philosophy, he took a medical degree in the Univ. of Pavia. But his preferences were for a literary career, and while a student he was ambitious to become the great historian of his country or time. He studied closely the Latin classics to acquire their style, and then applied himself to compiling a *History of His Own Times.* About 1516 he went to Rome, presented the portion of his work then completed to Pope Leo X., and was so highly complimented by the pope that he took up his residence in the city and resumed his history. Honors then came to him rapidly. Cardinal Giulio de Medici attached him to his court; Pope Adrian VI. presented him a canonry in his native town; and Pope Clement VII. gave him special apartments in the Vatican with maintenance for servants befitting a courtier, and, after the sacking of Rome, appointed him bp. of Nocera. He executed several important and confidential missions for the family of the Medici, but was unable to gain the favor of Pope Clement's successor, Paul III. Jovius wrote in Latin, acknowledged himself a flatterer and lampooner, and used 'a golden and an iron pen according as people paid him for honorable mention.' His *History* covered the period from the in-

vasion of Charles VIII. to 1547, was contained in 45 books, of which 6 are missing, and has never been considered trustworthy.

JOWETT, *jow'et*, BENJAMIN, LL.D.: 1817—1893, Oct. 1: educator: b. Camberwell. He was educated at St. Paul's School, elected to a scholarship at Balliol College, Oxford, 1835, and to a fellowship 1838; was ordained deacon in the Church of England 1842, priest 1845; became a tutor in Balliol College 1842, regius prof. of Greek 1855, master 1870, member of the hebdomadal council of Oxford Univ. 1875, and vice-chancellor for four years 1882; and was an examiner of classical schools 1849 and 53, classical moderator 1859, and member of the commission to prepare examinations for the E. India civil service. His publications include *The Dialogues of Plato translated into English*, 4 vols. (1871); *Thucydides translated into English*, 2 vols. (1881); and *The Politics of Aristotle*, 2 vols. (1885). He received the hon. degree LL.D. from the Univ. of Leyden 1875, and the Univ. of Edinburgh 1884.

JOWL, n. *jōl* [see JOLE]: the face or cheek; the cheek or head of a pig salted. JOWLS for JOLLS: see JOLL, and note under JOLT.

JOY, n. *joy* [F. *joie*, or *joye;* It. *gioia*, joy, a jewel: Sp. *joya*, a jewel: It. *godere*, or *gioire:* F. *jouir*, to enjoy —from mid. L. *gaudĭă*, joy—from L. *gaudērĕ*, to rejoice, to be glad]: the pleasing emotion arising from good enjoyed or expected; happiness; gladness; a term of endearment: V. to rejoice; to be glad; to exult; in *OE.*, to gladden; to enjoy; to have happy possession of. JOY'ING, imp. JOYED, pp. *joyd*. JOY'FUL, a. *-fûl*, very glad; exulting; happy; blissful. JOY'FULLY, ad. *-lĭ*, with joy; gladly. JOY'FULNESS, n. *-nĕs*, great gladness. JOY'LESS, a. destitute of joy; giving no pleasure or joy. JOY'LESSLY, ad. *-lĭ*. JOY'LESSNESS, n. *-nĕs*, state of being joyless. JOYOUS, a. *joy'ŭs*, gay; merry; giving joy. JOY'OUSLY, ad. *-lĭ*. JOY'OUSNESS, n. *-nĕs*, the state of being joyous. JOYANCE, n. *joy'ăns*, in *OE.*, gaiety; festivity.—SYN. of 'joy, n.': pleasure; delight; rapture; bliss; felicity; ecstasy; mirth; gayety; merriment; festivity; hilarity; exultation; exhilaration;—of 'joyous': glad; jubilant; lively; gleeful; blithe; mirthful; joyful; sportive; festive; happy; blissful; delightful; charming.

JOY, CHARLES ARAD: American chemist: b. Ludlowville, N. Y., 1823. He was educated at Union College and the Harvard Law School, and after a few years spent as professor of chemistry at Union, became in 1857 professor of chemistry at Columbia, where he remained for 20 years. In 1866 he became president of the Lyceum of Natural History and was long one of the editorial staff of the *Scientific American*.

JOY, GEORGE WILLIAM: English painter: b. Dublin, Ireland, 1844. He was educated at Harrow, and studied

art at Kensington, at the Royal Academy, and under Charles Jalabert and Bonnat, at Paris. He has won gold medals at Paris, Munich and Berlin. His principal pictures are *Domenica; Chess Players; Laodamia; Young Nelson's First Farewell; Wellington at Angers; Prince Charlie and Flora Macdonald; The Death of General Gordon; Princess Alice of Albany* (for Queen Victoria); *Reverie* (for the New Zealand Government); *Truth* (German Government); *Joan of Arc* (bought by French Government); *Lear and Cordelia*, in Leeds Municipal Art Gallery; *The Danaids; The Drummer of the Peninsular; Christ and a Little Child; The King's Daughter; The Sword; A Dream of Fair Women*, etc.

JOY, THOMAS: American colonist: b. Norfolk, England, 1610; d. Boston 1678. Upon emigrating to America in 1635 he established himself in Boston as an architect and builder, and in 1657 erected the Townhouse of Boston, the earliest civic structure of any note in New England. In 1646 for his share in the *Child Memorial*, protesting against both the civil and ecclesiastical government of the Bay Colony, he was fined and imprisoned.

JOYCE, ROBERT DWYER: Irish poet and physician: b. in County Limerick 1836, September; d. Dublin 1883, Oct. 23. In 1866 he came to the United States and practised medicine for several years in Boston, Mass., contributing during that period to the *Pilot* and other Irish journals. He published *Ballads, Romances, and Songs* (1872); *Deirdré*, a much admired epic poem, which appeared anonymously as one of the *No Name Series* (1876); *Legends of the Wars in Ireland* (1868); *Fireside Stories of Ireland* (1871); *Blanid*, a poem (1879); *The Squire of Castleton*, etc.

JOYEUSE ENTRÉE: the name given to the important privileges of the estates of Brabant and Limburg, with Antwerp, which the dukes were obliged to swear to maintain before they were allowed to enter the ducal residence, from which circumstance the name was taken. The most important of these privileges was that the people were released from an allegiance whenever the duke should attempt to violate their rights. So important were these privileges considered that many women went to Brabant to be confined there, that their children might enjoy the rights of a citizen of Brabant.

JOYNES, EDWARD SOUTHEY, A.M., LL.D.: American educator: b. Accomac County, Va., 1834, March 2. He was educated at the University of Virginia and at Berlin, in 1858 was appointed professor of Greek at William and Mary College, in 1866-75 was professor of modern languages at Washington College (now Washington and Lee University, Lexington, Va.), and subsequently held chairs in Vanderbilt University and the University of Tennessee. In 1882 he became professor of modern languages in South Carolina College (Columbia). He pub-

lished text-books of French and German, most important of which is the *Joynes-Meissner German Grammar* (1887).

JOY'S GEAR: a valve gear in which the valve rod is worked directly through a coupling rod or link from the connecting rod, and not by means of eccentrics. The necessary travel is obtained by utilizing the up and down movement of the coupling link to move a disc block to which one end of the valve rod is fastened, which slides up and down in a slot link moving in a fixed centre and placed at an angle with the rod. The engine is reversed by altering the direction of the angle of the slot link about its fixed centre.

JU'AN, Don: See Don Juan.

JUAN D'AUSTRIA, Don. See John of Austria.

JUAN FERNANDEZ, *jū'an fėr-năn'dĕz,* Sp. *ċhô-ân' fĕr-nân'dĕth,* called also Mas-a-tierra, *mâs-â-te-ĕr'râ:* rocky island in the Pacific Ocean, about 400 m. off Valparaiso, on the coast of Chili, to which it belongs; lat. 33° 40′ s., long. about 79° w., named from its discoverer: see Fernandez, Juan. It is 18 m. long, 6 m. broad, and mostly covered with high rocky peaks, the highest of which, Yungu, is about 4,000 ft. above sea level. There are also numerous and fertile valleys, which yield oats, turnips, apples, strawberries, melons, peaches, figs, grapes, sandal-wood, and other varieties of timber. Numbers of wild-goats wander on the cliffs. In 1872 there were only about a dozen Chilians living on the island; and they were dependent on Valparaiso for a supply of most of the necessaries of life. Here Alexander Selkirk, a buccaneer, whose native place was the Scotch fishing-village of Largo, lived in solitude for four years (1704-08): his story is supposed to have suggested the *Robinson Crusoe* of Defoe.

JUAREZ, *jô-â'rĕz,* S. *ċhwâ'rāth,* Benito, President of the Mexican Republic: abt. 1807-1872, June 18; b. Ixtlan, of Indian parents. Notwithstanding disadvantages of birth, he established a reputation as an advocate, became gov. of his native state, Oaxaca (1848-52), and an active member of the liberal party. Exiled during the dictatorship of Santa Anna, he returned when the republic was restored, was elected to the new congress (1856), and appointed pres. of the supreme court 1857, and consequently, in case of vacancy by death or default, president *ad interim* of the republic.

On the overthrow of the liberal pres., Comonfort, by Zuloaga and the clerical party 1858, Jan., Juarez refused to recognize the usurper, and finally established himself at Vera Cruz, by holding which he secured the receipt of the customs dues—in other words, of the larger half of the entire state revenue. Here he set up a provisional government, styling himself Constitutional President, and issuing decrees for the confiscation of the property of the

church, the institution of civil marriage, etc., in accordance with the reforms carried by Comonfort 1857. Meanwhile, Miramon, who had superseded Zuloaga 1859, Jan., prepared to take the field against his rival. His movements were delayed by a counter-rising of Juarists in Mexico; and before he again advanced, Juarez had secured recognition from the United States by conceding the protectorate (refused to them by Miramon) over the proposed transit routes in the north and in the isthmus of Tehuantepec. Early in 1860, Miramon besieged Vera Cruz, but his army suffered from want of supplies, his transports were intercepted by the U. S. ship-of-war *Saratoga*, and after a few weeks he was compelled to retire with loss. Juarez now assumed the offensive. At San Miguelito, Miramon was totally defeated by Ortega, and fled to Europe. His rival entered Mexico 1861, Jan., caused himself in June to be formally elected pres. for four years, and proceeded to execute the decrees against the clergy with great severity. But the finances of Mexico were now in a state of disorder, which even the wholesale confiscation of church lands could not remedy. In 1861, July, the government decreed suspension of payment for two years of the indemnities due to England and France, and formally secured by the hypothecation of the customs dues. This act, following a long series of outrages (mainly the work of Miramon and his faction), led to the intervention of the allied powers, and the occupation of Vera Cruz by England, France, and Spain. But it soon appeared that the French aimed at more than a simple redress of grievances. The appearance of the clerical chiefs Miramon and Almonte in their camp, and the extravagant demands of M. de Soligny, rendered any arrangement impossible. The failure of the negotiations at Soledad 1862, Feb., was followed by the conference of Orizaba (Apr. 9), in which England and Spain formally withdrew. France now threw off the mask, and Juarez appealed to the country, proclaiming a guerrilla war, and concluding a loan of $25,000,000 with the American minister, Corwin. The victory of Zaragoza at Puebla 1862, May 5, raised the hopes of the Mexicans; but fresh troops arrived from France. Puebla fell 1863, May 18, after a gallant resistance. Mexico and San Luis de Potosi followed, and 1864 the republican government was removed to Monterey. The arrival of Maximilian in May was succeeded by further losses from battle and desertion. In Aug., Juarez sent his family to New Orleans, but 'le petit Indien' himself still held on, though forced back on Chihuahua, and thence a year later across the frontier. His four years of office had expired, and Maximilian availed himself of these events to issue the fatal decree of 1865, Oct., in which he declared the republic extinct *de jure et de facto*, and sentenced to death all Juarist leaders taken in arms. Juarez proclaimed in answer that he held office until the expulsion of the invaders rendered a fresh elec-

tion practicable. By this time the complete pacification of the southern states enabled the Washington cabinet (which had persistently recognized Juarez) to interfere effectually on his behalf. Under diplomatic pressure (1866), Napoleon withdrew his troops, and the positions evacuated by the French were immediately occupied by the republicans. The unhappy Maximilian made a final stand in Queretaro, but was betrayed by Lopez and shot 1867, June 19, by order of court-martial—an ungenerous but not unjustifiable act of reprisal for his mode of warfare on Mexico, which Juarez, it is said, would have been unable to prevent. Mexico and Vera Cruz were reoccupied shortly after, and the triumph of the liberals was consummated by the re-election of Juarez to the presidency 1867, Oct., after a ten years' struggle, in which he had successfully maintained the constitution of 1857, under which he took office, against domestic treason and foreign intervention. He was re-elected pres. 1871, Oct., and held office till he died. Juarez, as governor of Oaxaca, was universally esteemed, and his honesty as a reformer has been attested by the British chargé d'affaires (Mr. Mathew's Report, 1861), and by the leading public men in the United States.

JUAREZ CELMAN, Miguel: Argentine statesman: b. Cordoba, Argentina, 1844, Sep. 29. He was graduated from the university of Cordoba in 1870 and after holding several political posts became governor of his province of Cordoba, and in 1884 a senator in the national Congress. In 1886 he was chosen president and the speculation rife during his administration, as well as the inflation of the currency and the magnitude of the public works undertaken at this time, induced a financial panic in 1890. The Celman administration was held responsible for this disaster and the president himself charged with having amassed a fortune from sums known to have been taken from the treasury. The cabinet resigned, but revolt broke out in Buenos Ayres 1890, July 26, and fighting in the streets continued for several days. On August 6, however, the president resigned and the vice-president, Pellegrini, assumed his duties for the remainder of the term.

JUBA, n. *jô'bă* [L. *jŭbă*, a mane]: the long and thickly set hairs on the neck, spine, and chest of some animals; a mane; in *bot.*, a loose panicle; a dense cluster of awns, as in the spikes of certain grasses.

JUBÆA, *jô-bē'a:* genus of palms of the same tribe with the cocoa-nut. *J. spectabilis* is a palm 30 or 40 ft. high, with a wide-spreading crown of pinnate leaves; native of Chili, where it is called *Coquito.* The Chilians cut off the crown, and collect the sap, which flows freely for several months, a fresh slice of the top of the stem being cut off every morning. A good tree will yield 90 gallons of sap, which being boiled down to a syrup of the con-

sistence of treacle, receives the name of *miel de palma* (palm-honey), and is an important article of the domestic economy of the country. The *Jubœa* is, in fact, the Jaggery (q.v.) palm of Chili.

JUBAL, *jô'bal*, or JABAL: son of Lamech and Adah. According to Genesis iv. 21, the inventor of the reed-flute and harp or lyre, and the father, or predecessor, of all them who play upon such instruments, that is, the discoverer of musical science.

JUBA RIVER: in eastern Africa, a large stream which flows into the Indian Ocean at about lat. 0° 5′ S. Its mouth marks the north boundary of the coast placed under British control by the agreement with Germany in 1890. The river has been explored to beyond lat. 3° N., and Cecchi identifies the Umo, as its upper waters; so that it probably takes its rise in the same mountains as the feeders of the Nile.

JUBE, n. *zhô'bā* or *jô'bē* [F. *jubé*, the pulpit or gallery of a church]: in many *R. Cath. Chh.*, the rood-loft in a cathedral or church which parts the chancel from the choir, and which obtains its name from the custom of pronouncing or chanting from it the Latin words *Jŭbē Domĭnĕ benedīcĕrĕ*, 'Order or enable us to praise thee, O Lord,' these words forming the beginning of the compline.

JUBEIL'. See BYBLOS.

JUBILANT, a. *jô'bĭ-lănt* [L. *jubĭlans*, or *jubĭlan'tem*, rejoicing, exulting—from *jubĭlum*, a joyous strain or sound: It. *giubilo;* Sp. *jubilo*, rejoicing, festivity]: uttering songs of triumph; thence, greatly rejoicing. JUBILATE, n. *jô'bĭ-lâ'tĕ* [L. *jubĭlātĕ*, rejoice or sing joyfully]: a name given to the third Sunday after Easter, from the service of that day beginning in anc. times with the 66th Psalm, *Jubĭlātĕ Dĕō, omnēs terræ*, 'Sing joyfully to God, all ye lands.' JU'BILA'TION, n. *-lā'shŭn* [F.—L.]: the declaration of triumph; a joyful shouting.

JUBILEE, n. *jô'bĭ-lē*, known also as the YEAR OF JUBILEE [F. *jubilé*, a jubilee—from mid. L. *jubĭlæus*, the jubilee—from Heb. *yóbel* or *jobel*, the blast of a trumpet, a shout of joy]: peculiar institution of a festival nature, among the Hebrews (Lev. xxv.), by which, every 50th (*not* 49th) year, the land that in the interval had passed out of the possession of those to whom it originally belonged was restored to them; lands and houses in walled cities, however, were excepted from the rule; these might be redeemed within one year after transfer; if not redeemed they passed in perpetuity to the new owner. All who had been reduced to poverty, and obliged to hire themselves out as slaves, were released from their bondage; no less were all debts remitted (Jos. Ant. iii. 12, 3). Hence in modern usage the term is loosely applied to any great occasion of public rejoicing, also to a musical performance on a vast scale. The jubilee formed, as it were,

an exalted sabbatical year (q.v.), and the land was completely to be left to itself through the Jubilee year, as on the Sabbath day. The design of this institution was in an economical view chiefly the periodical restoration of equilibrium in the families and tribes. It was to prevent the growth of an oligarchy of land-owners, and the total impoverishment of some families; as well as to increase the fertility of the soil and the growth of the population. But it had its deep significance in the relation of the Israelitish nation to Jehovah: 'The land shall not be sold in perpetuity; for the land is mine,' said Jehovah; 'for ye are strangers and sojourners with me' (Lev. xxv. 23). The Jubilee was proclaimed at the end of the harvest-time, like the sabbatical year, on the tenth day of the seventh month—the day of atonement—by the yobel (a kind of horn), hence its name. There is no record in the whole history of the Hebrews down to the Babylonian exile, of any observance of the Jubilee; after the return, however, it appears to have been rigorously kept, like the sabbatical year, for some time at least; but must soon have fallen into disuse. When the sabbatical year was *de facto* repealed by Hillel's *Prosbol* (a legal document entitling the creditor to claim his debt during this period), mention is no longer made of the yobel. The speculations of modern critics on the *possibility* of the yobel, and ingenious theories as to the date of its inauguration, cannot prevail against the undeniable fact that it has been kept; also that it is much more in harmony with the primitive theocratic character of the Mosaic institutions —according to which all the land was held as on a loan from Jehovah, who alone had absolute ownership of it— than with those of any later period, to which it otherwise would have to be referred. JU'BILEE, or JU'BILEE YEAR, institution of Rom. Cath. Church, the name of which is borrowed from that of the Jewish jubilee. The Rom. Cath. jubilee is of two kinds—'ordinary' and 'extraordinary.' The ordinary jubilee is that which is celebrated for a year from Christmas to Christmas, at stated intervals, the length of which has varied at different times. Its origin is traced to Pope Boniface VIII., who issued, for the year 1300, a bull granting a plenary indulgence to all pilgrim-visitors to Rome during that year, on condition of their penitently confessing their sins, and visiting the church of St. Peter and St. Paul, 15 times if strangers, and 30 times if residents of the city. The invitation was accepted with marvelous enthusiasm. Innumerable troops of pilgrims from every part of the church flocked to Rome. Giovanni Villani, contemporary chronicler, states that the constant number of pilgrims in Rome, not reckoning those who were on the road going or returning, during the entire year, never fell below 200,000. As instituted by Boniface, the jubilee was to have been held every 100th year. Clement VI., in obedience to an earnest request from the people of Rome,

abridged the time to 50 years. His jubilee accordingly took place 1350, and was even more numerously attended than that of Boniface; the average number of pilgrims, until the heats of summer suspended their frequency, being according to Matthew Villani, no fewer than 1,000,000. The term of interval was still further abridged by Urban VI., and again by Paul II., who 1470 ordered that thenceforward each 25th year should be held as jubilee—an arrangement which has continued ever since to regulate the ordinary jubilee. Paul II. extended still more, in another way, the spiritual advantages of the jubilee, by dispensing with the personal pilgrimage to Rome, and granting the indulgence to all who should visit any church in their own country designated for the purpose, and should, if their means permitted, contribute a sum toward the expenses of the Holy Wars. The substitution by Leo X. of the fund for building St. Peter's Church for that of the Holy War, and the abusive and scandalous proceedings of many of those appointed to preach the indulgence (q.v.), were among the proximate causes of the Reformation. In later jubilee years, the pilgrimages to Rome gradually diminished in frequency, the indulgence being, for the most part, obtained by the performance of the prescribed works at home; but the observance itself has been punctually maintained at each recurring period, with the single exception of the year 1800, in which, owing to the vacancy of the holy see, and the troubles of the times, it was not held.

The extraordinary jubilee is ordered by the pope out of the regular period, either on his accession, or on some occasion of public calamity, or in some critical condition of the fortunes of the church; one of the conditions for obtaining the indulgence in such cases being the recitation of certain stated prayers for the particular necessity in which the jubilee originated.

JUBILEES, *jō'bĭ-lēz*, Book of: historical, chronological, and pseudepigraphical book, originally written in Hebrew by, it is believed, a remarkably well-informed orthodox Jew of Palestine, some time before the destruction of the temple in Jerusalem. It professes to comprise a revelation made to Moses while on Mt. Sinai, with prophetic admonitions for the future; and it derives its name from the division of the time of which it treats—from the beginning of the world till the entrance of the Israelites into Canaan—into *jubilees* or periods of 50 years. Following the historical sequence in Genesis and Exodus (whence the book is known also as the *Little Genesis*), and collating freely from the Hagada, the author or compiler arranged the great events in the jubilee, sabbatic year, and year of their occurrence. From the Hebrew it was translated into Greek; nearly all of both texts were lost about the 11th or 12th c.; an Ethiopic version made from the Greek was found in Abyssinia 1844; a German translation from the MS. copy of the latter in the Tübingen Univ. was published 1849-51; and 1870 Ru-

bin attempted to translate it back to the Hebrew. The Abyssinian Church regarded it as canonical, and Biblical students have found much in it to aid interpretation and elucidate Hebrew belief prior to the Christian era.

JUCH, *yôk*, EMMA JOHANNA ANTONIA: American opera singer; b. Vienna 1863, July 4. She came with her parents to the United States when an infant and was educated in the public schools of New York. She studied singing under Murio-Celli for three years, making her concert début in Chickering Hall, New York, and her operatic début as Felina in *Mignon* in London 1881. She sang for three seasons in the Mapleton opera company, and under the management of Theodore Thomas in the United States sang the part of Elsa in *Lohengrin* on alternate nights with Nilsson. She was the prima donna of the American opera company for three seasons, and has sung in the Emma Juch English Opera Company and other organizations. She was married in 1894 to Francis L. Wellman, of New York.

JUDÆ'A, or JUDEA. See PALESTINE.

JUDAH, *jū'da* [Heb. *Yehuda*, 'the praised']: fourth son of Jacob and Leah, and founder of the greatest and most numerous of the 12 tribes of Israel. In the march through the wilderness, it had the post of honor—the van—assigned to it, and tradition narrates that its standard was a lion's whelp, with the words: 'Arise, O Jehovah, and let thine enemies be scattered!' After the conquest of Canaan, its territories stretched from the Dead sea on the e. to the Mediterranean on the w. (though the Philistines long held possession of the fertile district w. of the mountains of Judah), and from Jerusalem (excluding that city) on the n. to the land of the Amalekites on the s.; the capital was Hebron.

JUDAISM, n. *jô'dā-ĭzm* [from *Judah*, greatest and most numerous tribe of the Hebrews]: the religious rites and doctrines, and the social system, of the Jews; conformity to the rites and religion of the Jews. JUDAIZE, v. *jô'dā-īz*, to conform to or practice Judaism; to affect the manners of the Jews. JUDAIZING, imp. *jô'dā-ī'zĭng:* ADJ. conforming to the Jewish rites and religion. JU'DAIZED, pp. *-dā-īzd*. JUDAIZER, n. *jô'dā-ī'zẽr*, one who conforms to the Jewish rites and religion (see EBIONITES). JUDAIC, a. *jô-dā'ĭk*, or JUDA'ICAL, a. *-ĭ-kăl*, of or pertaining to the Jews. JUDA'ICALLY, ad. *-lĭ*. JUDA'IST, n. *-dā'ĭst*, an adherent of Judaism. JUDE'AN, n. *-dē'ăn*, a native of Judæa: ADJ. pertaining to.

JUDAISM. See JEWS; MASSORA; CABBALA; TALMUD; SEMITIC LANGUAGE; SEMITIC NATIONS; BABYLONIAN CAPTIVITY; SYNAGOGUE; LITURGY; YIDDISH LITERATURE; PASSOVER; REFORMED JUDAISM; JERUSALEM; JEWS, THE LOST TEN TRIBES OF; JEWISH SECTS; EBIONITES; JEWISH WOMEN'S COUNCIL; CHAZARS; MOSES; JOSHUA; JACOB; ABRAHAM; etc.

JUDAISM, REFORMED. See REFORMED JUDAISM.

JUDAS, or JUDE: one of the twelve apostles. He appears in the apostolic catalogue of St. Luke as 'Judas of James,' that is, son or brother of James; in St. Mark's and St. Matthew's list he is styled Thaddæus, of which Judas may be an abbreviation. Nothing is known of his life except what is ascribed to him by widely spread tradition. According to western legend he went in company with Simon the Canaanite to evangelize the Persians, and closed his life by martyrdom. In the calendar of the Book of Common Prayer as well as in the Roman Catholic calendar the festivals of St. Simon and St. Jude occur together on Oct. 28 and in the Greek Church on May 16.

JUDAS ISCARIOT, *ĭs-kăr'ĭ-ŏt* [that is, of the family of Cariot in the tribe of Judah]: one of the twelve apostles of Christ. He is styled the son of Simon, and was treasurer to the little company that attended Jesus, whom he betrayed with a kiss into the hands of the Jewish priests, for thirty pieces of silver. His divine Master addressed to him the mild reproof: 'Dost thou betray the Son of Man with a kiss?' Remorse drove him to suicide. Nothing is known of his life previous to the appearance of his name in the lists of the apostles.

JU'DAS MACCABÆ'US. See MACCABEES.

JU'DAS'S TREE (Cercis): genus of trees of nat. ord. *Leguminosæ*, sub-order *Cæsalpinieæ*. The common Judas's Tree (*C. Siliquastrum*) is a native of S. Europe, and of the warmer temperate parts of Asia. It has almost orbicular, very obtuse leaves. The flowers, rose-colored, appear before the leaves. There is a legend that Judas hanged himself on a tree of this kind. The American Judas's Tree (*C. Canadensis*) is very similar, but has acuminate leaves. The flower-buds of both species are frequently pickled in vinegar. The wood of both species is very beautiful, veined with black, and takes an excellent polish.

JUDD, *jŭd*, GARRITT PARMLEE: 1803, Apr. 23—1873, July 12; b. Paris, N. Y.; statesman. He acquired a medical education, was sent to Honolulu, Hawaii, by the American Board of Missions 1828, accompanied Com. Wilkes in his exploring expedition 1840; resigned his office under the American Board to become recorder and interpreter at the court of Kamehameha III. 1842; organized the first native ministry 1843, became minister of finance, was engaged in treaty service in Europe and on a diplomatic mission in France, and did much to elevate the character of the natives and improve the capital city.

JUDD, ORANGE: editor; b. near Niagara Falls, N. Y., 1822, July 26; d. 1892, Dec. 27. He graduated at Wesleyan Univ. 1847; taught school three years, studied analytical and agricultural chemistry in Yale 1850-53; became editor of *The American Agriculturist* 1853; and

was its owner and publisher 1856-81. In 1853-63 he was also agricultural editor of the New York *Times;* 1863 served in the U. S. Sanitary Commission and with the Army of the Potomac; 1868 was president of a railroad on Long Island; 1871 gave Wesleyan Univ. the Orange Judd Hall of Natural Science, and was one of the trustees 1871-81; and (1862) originated the scheme afterwards developed into the International Sunday School Lessons.

JUDD, SYLVESTER: 1813, July 23—1853, Jan. 20; b. Westhampton, Mass.; Unitarian minister and author. He graduated at Yale 1836, declined a professorship at Miami College, graduated at Cambridge Divinity School 1840, and was pastor of the Unitarian Church in Augusta, Me., 1840, Oct. 1, till his death. He is best known as the author of the romance *Margaret* (1845); he wrote also the poem *Philo* (1850); romance *Richard Edney* (1850); and discourses on *The Church* (1854). He left a MS. drama, *The White Hills.*

JUDE, *jūd,* EPISTLE OF: one of the smallest and least important books in the canon of the New Testament; placed among the *Antilegomena* (Doubtful Writings) by the primitive church, while some even considered it spurious. It was not made use of by the Asiatic churches until the 4th c., and does not appear to have been known in the West until toward the end of the 2d c. Those who quote it with respect, intimate some doubt concerning it; e.g., Clemens Alexandrinus, Origen, Jerome. This doubt appears to have been due largely to its quotation from an apocryphal book, the book of Enoch (see Jerome, *Catalog. Scr. Eccl.* 4); but the mere fact of such a quotation is not now regarded as of any decisive significance. At the Reformation, similar questions revived, and were entertained first by Luther and Calvin, and afterward by the Magdeburg Centuriators and Grotius. Modern critical opinion is not unanimous for its canonicity; some eminent scholars, indeed, deny it. Yet the preponderance of testimony seems in its favor, as is all its internal evidence drawn from its substance, style, and elevated sentiment. Though of apostolic tone, it cannot be declared to be of apostolic authorship. The authorship is uncertain; it has long been attributed to Judas (or Jude) Lebbæus or Thaddæus, one of the 12 apostles; but is now by the majority of scholars ascribed to Jude, a brother of James (see JAMES, THE JUST), and one of the brothers of the Lord Jesus. Its date was probably after the death of the apostle Peter, from whose second epistle it quotes (verses 17, 18); and it was probably not later than A.D. 80.

JUDGE, n. *jŭj* [F. *juge,* PROV. *jutge;* It. *giudice,* a judge—from L. *jūdĭcĕm,* a judge]: the presiding officer in a court of law, who also awards punishment to offenders; a chief magistrate; one who has skill to decide on the merits or value of a question or cause; the Supreme

Being: v. to hear and determine; to decide; to form or give an opinion; to distinguish; to pass sentence upon; to be censorious toward; to censure severely; to doom; to discern; to esteem; to reckon. JUDG'ING, imp. JUDGED, pp. *jŭjd.* ADJ. sentenced. JUDGE-ADVOCATE, in *mil.*, a person appointed to superintend the proceedings of courts-martial. JUDG'SHIP, n. the office of a judge. JUDGMENT, n. *jŭj'mĕnt* [F. *jugement*]: the act of judging; decision; determination; award; right or power of passing judgment; punishment inflicted by God; the sentence or decision of a court of law (see JUDGMENT, in Law): opinion; condemnation; that faculty of the mind which enables a man to ascertain truth by comparing facts and ideas (see JUDGMENT, in Logic). JUDGMENT-DAY, the time when God, through his Son Christ Jesus, will judge the world. JUDGMENT-SEAT, the seat on which a judge sits. JUDGMENT-HALL, a court of justice. JUDGMENT OF GOD, a term formerly applied to a judicial decision, by ordeal, single combat, and the like, in which it was imagined that God would vindicate innocence by impunity or success. THE JUDGMENT, the final trial of mankind. The doctrine of a judgment after death has always been associated with the belief in man's future existence, and is maintained as a doctrine of natural religion on the ground of that responsibility of which conscience always testifies, and of the evident absence of a due proportion of rewards and punishments to human actions in this life. This doctrine, however, as a doctrine of the Christian religion, comprises elements not supplied by merely natural religion, such as the appearance in glory and power of the Son of Man and Son of God in the person of the Lord Jesus Christ as judge. Then, to the few grand and simple teachings of the Bible, many additions have been made by theological inference, or by imagination kindled by the vivid figures used by prophets and apostles; but for these the Bible is not to be held responsible. The wisest Christian thinkers accept unreservedly its positive declarations of the principles on which the final judgment of the world by Christ shall proceed, but imitate its silence as to the details of time and place.—As a doctrine of revelation, the final judgment stands in close connection with the resurrection (q.v.) of the dead. —SYN. of 'judge, n.': umpire; arbiter; arbitrator; referee;—of 'judgment': estimate; opinion; notion; discernment; correctness; taste; criticism; discrimination; intelligence; sagacity; penetration; calamity; punishment; sentence; doom; judicatory; condemnation.

JUDGE: generic descriptive name of a public official legally commissioned to hear and decide cases brought for trial before him. In Great Britain—though it is otherwise in the United States—it is not usual to designate the highest class of judges by the epithet of judge, and British lawyers never do so. Thus, instead of saying Judge Blackstone, Judge Pollock, Judge Eldon, the prop-

er description is—Mr. Justice Blackstone, Chief Baron Pollock, Lord Chancellor Eldon, etc., according to the particular court in which they presided. In the United States, the judges of the U. S. Supreme Court are now usually called 'Justices'; and the presiding judge of any supreme court, state or federal, is known as Chief-Justice. In Scotland, the usual prefix to the name of a judge is Lord; and the judges there, on their appointment, often assume new titles in addition to the prefix Lord. In England, the judges of the superior courts are called lords only while they sit in court, and are so addressed by counsel, but not elsewhere. The practice has long been for the crown to confer the honor of knighthood on all judges of the superior courts of law and equity in England, but not in Ireland or Scotland. All the superior judges are appointed by the crown, and since 12 and 13 Will. III. c. 2, have held their offices during good behavior; since 1 Geo. III. c. 23, they have also continued to hold their appointments notwithstanding the demise of the crown. They can be removed from their office only on the address of both houses of parliament. They all, except the master of the rolls, are disqualified from sitting in the house of commons. Judges have no privileges over other persons in respect of their obeying the law, except that the common-law judges in England have the privilege of suing and being sued in their own court, though not of judging in their own cases.

In the United States, a judge is not permitted to try a case in which he has an interest, nor to be witness in a case tried before him. No law prevents a judge from sitting for trial of a case in which he has been counsel; though usage and etiquette certainly are against it. A judge may be removed by impeachment if corrupt; but is not liable otherwise for any of his acts that are within the limit of his jurisdiction. See JUDICIARY in the United States.

The term judge has been appropriated in England as the proper descriptive title also of the judges of the county courts established 1846.—*Judge Ordinary*, in English law, is the descriptive title of one judge only—viz., the judge of the divorce and probate court. In Scotland, the phrase is often applied to all judges, superior and inferior, whenever they have a fixed and determinate jurisdiction, in distinction from commissioners, who have an occasional and temporary judicial authority delegated to them.

JUDGE-AD'VOCATE: in the United States, a military officer (wherever practicable) who in the name of the govt. prepares cases, summons witnesses, and acts as prosecutor before and legal adviser to courts-martial, courts of inquiry, and milit. commissions. The judge-advocate belongs to the bureau of military justice in the war department. The judge-advocates are stationed at the headquarters of each of the military departments of

the country, as legal advisers to the commanding general, and are also assigned to the above general duties in their own departments. In cases where the regular army judge-advocate cannot for any reason be assigned to court-martial or similar duty, a reputable lawyer in the locality may be engaged for the purpose. JUDGE-AD'VOCATE-GEN'ERAL: chief of the bureau of military justice at Washington, who receives for revision and for record the proceedings of courts-martial, courts of inquiry, and military commissions. His rank is brigadier-general.

JUDG'ES, BOOK OF [Heb. *Shoftim*]: canonical book in the Old Testament, recording the achievements of those heroes who, at different periods in the early history of the Hebrews, before the consolidation of the government under a monarchy—during the more than 400 years from the death of Joshua to the reign of Saul—arose to deliver their countrymen from the oppressions of neighboring nations, or to guide a tribe or the whole people in some critical time. They were leaders in administration, magistrates, deliverers, guides. Only three of the 16 enumerated in the book, Deborah, Eli, and Samuel, were *Judges* in the modern sense of the word. They were usually chosen by the people, though in a few cases designated by direct Divine appointment; and they seem to have had a faculty of faith which made them receptive of an unusual degree of Divine guidance and strength and gave them power with the people. Their office was not hereditary; they had no remuneration; they could not levy taxes or appoint officials; their functions were limited by the Hebrew law. Their record, as contained in the book, has given rise to much criticism. It is not a *history*, properly speaking. The events recorded in it do not follow each other chronologically, nor is there any other order evident in their arrangement. It is rather a collection of detached historical traditions from the time of the Hebrew republic, and its compilation may be assigned to a date between the great victory over the Philistines, and the beginning of David's reign. It exhibits (whether with a royalistic tendency, as has been supposed by some, or in order to point the lesson that, however deeply sunk a people—emphatically *the* people—might be in slavery or idolatry, or both, God would always send them a deliverer at the right time) the lawless and ungodly state of Israel during the greater part of this period, and the evil consequences of their intimate connection with the idolatrous nations around them. The book naturally falls into two portions—the first, to chap. xvi., containing the heroic deeds of the single 'judges'; the second, from chap. xvii., the two accounts of the idol of Micah, and of the crime of Benjamin. The space of time over which the book extends has been hotly contested; the chronology is confused, and some of the events recorded were evidently not successive but contemporaneous. The book differs considerably from the other historical books of the Bible

by its simplicity and originality. That most of the heroic adventures related contain—sometimes, perhaps, under a highly poetical guise—true historical facts, has been doubted by but a very small number of critics. Ancient traditions make Samuel the author, or rather redactor, of the book, and there is certainly little to be said against, if not much for, this supposition. Compare Ewald, Wette, Rosenmüller, Studer, Keil, etc. See JEWS.

JUDG'MENT, in Law: final determination of a law court in an action, when the litigation is at an end. In courts of equity, the more usual corresponding term is a decree or order, and in criminal and admiralty courts, a sentence. Most judgments of the superior courts are capable of being appealed against (see APPEAL). When a judgment is not appealed against within a certain time allowed for the purpose, then it is final, and binding on the parties. If the judgment be registered, it will have the effect of preventing the judgment debtor from selling or alienating his lands, but in general has no such effect on his goods and chattels or personal estate except money invested in government stock. In order to make a judgment effectual in an action of debt, if the debtor refuses to pay, a further process is necessary on the part of the creditor, called execution (q.v.).

JUDG'MENT, in Logic: technical term for an affirmation of some kind or other, as 'snow is white,' 'man is mortal.' It applies primarily to the mental act from which the verbal proposition emanates. The contrast to it is a mere *notion,* as white, mountain, mortality. In a judgment, two notions generally enter, and ordinarily there is some declaration coupling the two together, a function performed linguistically by a verb. A complete meaning, as expressed in a grammatical sentence, is a judgment. Other designations for the same thing are: proposition, assertion, predication. Various classifications of judgment have been proposed. These are all provisional. The more familiar forms of recognized judgments are describable under the following names: categorical, disjunctive, hypothetical, analytic, synthetic, and impersonal, together with positive and negative. Positive and negative explain themselves. A categorical judgment is one which makes a definite, unqualified statement, e.g., 'man is a biped.' Disjunctive judgments state that one or more of a series of alternatives are true, e.g., 'the door is either open or shut.' The hypothetical judgment states a fact as contingent upon some one or more other facts, e.g., 'if it rains, we shall get wet.' An analytic judgment dissects a situation already given, e.g., 'quartz is hard.' A synthetic judgment is supposed to add something not already given, or at least obviously given, in a situation, e.g., 'gold is a chemical element.' Impersonal judgments are illustrated by such expressions as 'it rains.'

The *intellectual faculty* called Judgment means the power of forming judgments, and by implication, the further power of determining them to be true or false. This last function is perhaps what is most prominently implied in the faculty, as commonly understood. A judge in a court of law finds that a case comes under, or does not come under, a certain statute; which finding constitutes his decision. A scientific man decides a theory to be true by a certain extent of coincidence with observed fact. An artist approves or disapproves a work of art by its agreeing or disagreeing with his standard, or those previous productions that have settled his conception of excellence in that species. As reasoning is simply a process in which judgments are combined to solve problems, both practical and theoretical, the significance of judgment is fundamental for human thought.

JUDGMENT NOTE: a promissory note to which a power of attorney to appear and confess judgment for the sum named has been attached.

JUDIC, *zhü-dēk'*, ANNA DAMIENS: actress; b. Semur, Côte d'Or, France, 1849, July 17. She was educated for the stage at the Paris Conservatory, and made her first public appearance at the Gymnase Theatre 1867, June 2, in the *Grandes demoiselles*. She had remarkable success, played an engagement in Brussels 1871, became attached to the Bouffes-Parisiens, Paris, 1872, and was engaged at the Varieties 1876. She has since played in the principal cities of Europe and achieved fame in *La Timbale d'argent, La Petite reine, Le Grelot, La Rosière d'ici, La Branche cassée, Madame l'Archiduc, La Belle Hélène, La Périchole, Le Docteur Ox,* and *Les Charbonniers.*

JUDICA, n. *jô'dĭ-kă:* the fifth Sunday in Lent, so named in Rom. Cath. Chh. from the service of the day beginning, *Ju'dĭca me, Dĕŭs,* 'Judge me, O God'—see Ps. xliii.

JUDICABLE, a. *jô'dĭ-kă-bl* [mid. L. *jūdĭcābĭlĭs*—from L. *judĭcārĕ,* to judge, to be or sit as a judge (see JUDGE)]: that may be tried or judged. JU'DICA'TIVE, a. *-kā'tĭv,* having power to judge. JU'DICA'TORY, n. *-kā'tér-ĭ,* a court of justice. ADJ. pertaining to a judge; judicial; dispensing justice. JU'DICA'TURE, n. *-kā'tūr* [F. *judicature*—from mid. L. *jūdĭcātūră*]: a court of justice; the power or the system of distributing justice by legal trial and determination.

JUDICIAL, a. *jô-dĭsh'ăl* [OF. *judiciel*—from L. *jūdĭcĭālĭs,* of or belonging to courts of justice—from *jūdĭcĕm,* a judge (see JUDGE)]: pertaining to courts of justice, or to a judge; proceeding from a court of justice; inflicted as a punishment. JUDI'CIALLY, ad. *-lĭ.* JUDI'CIARY, a. *-ĭ-ér-ĭ,* pertaining to courts of justice; passing judgment. JUDI'CIOUS, a. *-ŭs* [F. *judicieux*—from mid. L. *judĭcĭōsŭs*]: wise; prudent; acting according to sound judgment. JUDI'CIOUSLY, ad. *-lĭ.* JUDI'CIOUSNESS, n. *-nĕs,*

the quality of acting or being according to sound judgment. JUDICIAL BLINDNESS, inability to see the proper course to be followed—a phrase applied to kings, a party in the state, etc.—SYN. of 'judicious': wise; skilful; discerning; prudent; rational; sagacious; discreet; in *OE.*, judicial.

JUDICIAL SEPARATION, in Law: separation of two married persons by order of the proper court. Married persons may, if they please, mutually agree to live separate, and they may enter into a deed of separation for that purpose, which to some extent is recognized as valid by courts of equity; this is called voluntary separation. But, in the eye of the law, two married persons living apart are still married, and retain the status of married persons, and must sue and be sued in all respects the same as if they were still cohabiting. And a deed of separation is always revocable by the parties, though to some extent binding on each, if the other do not consent to renew the cohabitation. But when the parties have not mutually consented to separate, one of them can compel a judicial separation for certain grounds of misconduct. Thus, either party may apply on the ground of adultery, or cruelty, or desertion without cause for two years and more. The kind of cruelty which has been held a ground of judicial separation is difficult of definition. The legal grounds of judicial separation vary considerably in different states; but in most of the states are nearly the same as in England.

The consequences of a judicial separation are as follows: The parties, not being divorced, cannot marry again; but there is no longer the duty of cohabiting. Part of the decree may consist of an award of a certain income to the wife after separation, and the court may make orders as to the custody and maintenance of children. But, irrespective of this, the wife becomes, to all intents and purposes as regards her future property, in the same position as if she were unmarried. On the other hand, the husband is no longer responsible for maintaining his wife, except so far as he may have been ordered to pay her alimony, and he is not liable for her future debts. See MARRIAGE; DIVORCE; HUSBAND AND WIFE.

JUDI'CIARY in the United States: including judges of various grades. The highest judicial body is the supreme court of the United States, established by the constitution, and comprising a chief-justice, salary $13,000 per annum, and 8 associate-justices, salary $12,500 per annum each, all appointed by the president, and subject to confirmation by the senate. These justices hold office during good behavior, and their salaries cannot be reduced during their incumbency. The chief-justice presides over the court when in full session, and the associate-justices take precedence (1) according to the date of their commissions, or (2) when two or more commissions bear the same date, according to their age. In case

of the death or inability of the chief-justice to perform his duties, the associate-justice first in precedence takes his place till a successor is appointed and confirmed. This court has jurisdiction over all cases in law and equity arising under the constitution, the laws of congress, and treaties with foreign countries; exclusive jurisdiction over all controversies of a civil nature where a state is a party (except as below), and over suits or proceedings against ambassadors or other public ministers consistent with the laws of nations, but not exclusive over suits brought by ambassadors or other public ministers; and original jurisdiction over civil controversies between a state and an alien. The supreme court holds one session annually, beginning on the second Monday in Oct.; also such special terms as may be necessary. None of these judges is permitted to engage in other legal business, and on resigning after at least ten years' service, and on attaining the age of 70 years, each one is paid the full salary of his office during the remainder of his life.—The United States is divided into 9 judicial circuits, to each one of which a member of the supreme court of the United States is assigned. In each circuit is a circuit court with one judge, salary $7,000 per annum, who presides over the business of his court, and has the same power and jurisdiction as the justice of the supreme court allotted to the circuit. It is the duty of the chief-justice and of each associate-justice of the supreme court to attend at least one term of the circuit court to which he is assigned during every period of two years. The circuit courts have original jurisdiction in civil suits at common law or in equity where the matter in dispute exceeds in value $2,000 exclusive of interest and of costs, and the United States is plaintiff or petitioner, or an alien is a party, or the suit is between a citizen of the state where the suit is brought and a citizen of another state; also in cases of violation of the copyright or patent laws; and have appellate jurisdiction by writs of error to the district courts or appeals from them.—The United States is further subdivided into 80 federal judicial districts, each one of which has a U. S. district court, with one judge appointed by the pres. and a resident of the district, except in each of the states of Alabama, Georgia, Mississippi, South Carolina and Tennessee one district judge shall be district judge for each of the districts included in the state for which he is appointed.

In the southern district of New York there are three district judges. In the Minnesota district, in the northern district of Illinois, the eastern district of Pennsylvania, the district of New Jersey, and the northern district of Texas there are two district judges. The district judges receive a salary of $6,000 each. The district courts have civil and criminal jurisdiction, all the powers of courts of admiralty, and, since 1845, jurisdiction over contracts and torts regarding vessels plying between the

various ports on the great lakes.—There is also a United States court of claims, with a chief-justice, salary $6,500 per annum, and 4 associate-justices, salary $6,000 per annum each.—The federal judicial system extends also into the several territories, each one of which has a supreme court with a chief-justice and from 2 to 6 associate-justices, and three district courts presided over by the supreme court justices between supreme court terms. These judges also are appointed by the pres., hold office for four years unless sooner removed, and receive salaries of $3,000 per annum each. Territorial courts are legislative courts created by congress, and the distinction between state and federal jurisdiction does not obtain, as there is but one system of government or of laws operating within a territory of the United States. It has been the practice of congress to establish the territorial courts and outline their jurisdiction, but to permit the territorial courts and legislature to regulate practice and procedure therein.—For the District of Columbia a special supreme court was provided 1863, comprising a chief-justice and 5 associate-justices. This court has the same jurisdiction as circuit and district courts, but action in them can only be taken against residents of the District or persons found therein, and any judge of the court may hold a criminal court for the trial of crimes and offenses arising in the District.

The various states in the Union have observed no uniformity in establishing their judicial systems, hence they differ widely in the names, numbers, and functions of their courts, and in the methods of selecting their judges. The usual courts are supreme, superior, circuit, oyer and terminer, appeals (or errors and appeals), chancery, orphans' (or surrogate's), general and special sessions, common-pleas, and municipal, district, police, and peace-justices' courts. Courts of common-pleas have original and general jurisdiction for the trial of issues of fact and law according to common-law principles. Judges are appointed by governors with or without the consent of the state senates, elected by legislatures in joint session, or elected by direct popular vote; they serve for terms of 2 to 14 years, or during good behavior. In some states they can be removed only by conviction on impeachment, when, like the U. S. senate, the state senate may sit as a court of impeachment; in others they may be removed by the gov. See CHANCERY; COMMON LAW; COMMON LAW, COURTS OF; COUNTY COURTS; LAW; JUDGE; COURTS OF JUSTICE.

JUDITH, *jū'dĭth:* heroine of the apocryphal and fictitious book of Judith (probably of B.C. 2d c.; Movers, Ewald, etc.); represented as a beautiful Jewess of Bethulia, who perils her life and chastity in the tent of Holofernes, general of Nebuchadnezzar, in order to save her native town, by the assassination of the Assyrian commander. This she achieves, and escapes with the head of

Holofernes to Bethulia. Her townsmen are inspired with a sudden enthusiasm, rush out upon the enemy, and completely defeat them. The tale is not mentioned by Josephus, and has, from an early period, been held to be an allegory; but it seems probable that it is a legend founded on some fact. It has frequently furnished poets and painters with subjects.

JUDSON, *jŭd'son*, ADONIRAM, D.D.: missionary; 1788, Aug. 9—1850, Apr. 12; b. Malden, Mass., where his father was pastor of the Congl. Church. He graduated at Brown Univ. 1897, and Andover Theol. Seminary 1810. While in the seminary he, with five other students, applied to the General Assoc. of Massachusetts (Congl.), seeking advice as to missionary labor among the heathen. This application led to the formation of the Am. Board of Commissioners for Foreign Missions. Judson married (1) Ann Hasseltine (q.v.), and sailed for India as a missionary under the auspices of the London Missionary Soc. 1812. On the voyage he changed his views regarding baptism, and on reaching Calcutta he and his wife were baptized by immersion; this led to his withdrawal from the London Missionary Soc. and his subsequent identification with the Bapt. missionary work. Anxious to work in Burmah, he settled in Rangoon, learned the language, and wrote and spoke it afterward in preference to English. In 1814 the American Bapt. Missionary Union was established, and thenceforth his labors were under its auspices. He began preaching in public as soon as he had mastered the Burmese language, and early set himself about writing, translating, and publishing tracts and other religious documents for his native congregation. The accession to the throne of a zealous Buddhist king threatened to put a stop to Christianizing work in the kingdom, and Dr. Judson went to Ava to solicit from the king protection for the missionaries. In 1817 he completed the translation of the Gospel of Matthew into Burmese, and 1821 the Epistle to the Ephesians. Three years later he removed to Ava, and soon afterward the war between the English and the Burmese checked all missionary work, and caused the arrest and imprisonment of the leaders in it. He spent two years in prison, heavily chained and in daily expectation of being put to death. After the close of the war, he re-established the mission at Amherst, declined the office of interpreter to the English legation, began a series of missionary tours, and removed to Maulmain, the English capital. In 1833 he completed the translation of the Bible into Burmese and began revising the whole Scriptures. In 1834 Dr. Judson married (2) Sarah Hall (Boardman). He then applied himself for six years to the preparation of a Burman grammar, Pali dictionary, Burman dictionary, and complete Burman Bible. He returned to the United States and married (3) Emily Chubbuck (q.v.) 1846, and the same year resumed his work in Maulmain. In 1849 he

completed the first part of his Burman dictionary—Burmese into English and English into Burmese—and died before the second part was finished. His 25 years of labor in the Karen jungles were rewarded by the conversion of 20,000 people to Christianity. His whole missionary career extended nearly 40 years. He received the degree D.D. from Brown Univ. 1823. He was one of the most devoted and heroic, as well as one of the earliest, of American missionaries to heathen lands.

JUD'SON, ANN HASSELTINE: first wife of Dr. Adoniram J.; 1789, Dec. 22—1826, Oct. 24; b. Bradford, Mass.; missionary. She was educated at Bradford Acad., became a teacher there, married Dr. Judson 1812, Feb. 5, and accompanied him to his Indian missionary field. In 1822 she returned to the United States after visiting England, on account of impaired health; prepared a *History of the Burmese Mission;* addressed the Bapt. Gen. Convention in Washington on the condition and needs of the mission, and returned to India 1823. On arriving at Rangoon, she found that her husband and other missionaries had been imprisoned. After vainly seeking assistance for her husband and protection for herself and child from the native authorities, she also went to prison. After the close of the war she narrowly escaped death from spotted fever, accompanied Dr. Judson to Amherst, translated the Gospel of Matthew and the Burmese catechism into Siamese, and aided in the compilation of a Burmese grammar.

JUD'SON, EDWARD, D.D.: missionary; b. Maulmain, Burmah, 1844, Dec. 27; son of Adoniram and Sarah Boardman Judson. He graduated at Brown Univ. 1865, was appointed principal of the Townshend Seminary, Vt., became prof. of Latin and modern languages in Madison Univ. (now Colgate) 1867, and was pastor of the N. Orange (N. J.) Bapt. Church 1875-81. In the latter year he resigned and began missionary labor in the lower part of New York, hoping to erect a large church building there as a memorial to his father. He succeeded in gathering a large congregation in the tenement-house district, and with gifts amounting to $220,000, erected a building to comprise a church auditorium, spacious Sunday-school rooms, young men's lodging-house, children's home, kindergarten, and industrial and singing schools. It was named the Judson Memorial, in memory of his father. He received the degree D.D. from Madison Univ. 1883.

JUD'SON, EMILY CHUBBUCK: 3d wife of Dr. Adoniram Judson; 1817, Aug. 22—1854, June 1; b. Eaton, N. Y.; missionary. She was educated in the Utica female seminary, engaged in literary work 1841, attracted the friendship of Nathaniel P. Willis, and assumed the pen-name *Fanny Forrester.* She married Dr. Judson 1846, June 2, resided in Amherst, India, till after her husband's death, and returning to the United States 1851,

applied herself to the promotion of the cause of missions. Her publications include *Charles Linn* (1841), *The Great Secret* (1842), *Allan Lucas* (1843), *Alderbrook*, 2 vols. (1846), *Kathayan Slave* (1853), *My Two Sisters* (1854), *An Olio of Domestic Verses, Trippings in Author Land,* and *Memoir of Mrs. Sarah B. Judson.* She also gathered the material for Francis Wayland's life of her husband.

JUDSON, HARRY PRATT, A.M., LL.D.: American educator; b. Jamestown, N. Y., Dec. 20, 1849. He was graduated from Williams College in 1870, was professor of history in the University of Minnesota 1885-92, and was professor of political science in the University of Chicago until 1907, when upon the death of W. R. Harper (q.v.) he was elected president. His works include: *Cæsar's Army, a Study of the Military Art of the Romans* (1888); *Europe in the Nineteenth Century; The Growth of the American Nation* (1895); *The Higher Education as a Training for Business* (1896); *The Government of Illinois* (1900); etc.

JUD'SON, SARAH HALL (BOARDMAN): 2d wife of Dr. Adoniram Judson; 1803, Nov. 4—1845, Sep. 1; b. Alstead, N. H.; missionary. She married the Rev. George Dana Boardman 1825, July 4, accompanied him to the Bapt. mission in India, spent two years in Calcutta learning the Burmese language, engaged in missionary work in Amherst, Maulmain, and Tavoy, established a girls' school in the latter place, and after her husband's death (1831) became interested in the work in the Karen jungles. She married Dr. Judson 1834, and aided him in his work at Maulmain till 1845, when her health became impaired. With her husband she then started for the United States, but died while in the harbor of James Town, St. Helena. She translated into Burmese a part of *Pilgrim's Progress,* her first husband's tract *Dying Father's Advice,* and numerous hymns.

JUG, n. *jŭg* [a familiar personification forming an equivalent of *Joan, Jenny,* or *Jill:* Dan. *jugge*]: a vessel with a handle for holding drink, generally swelling out in the middle, and having a narrow mouth: v. to emit or pour forth the sound of *jug,* as the nightingale; to stew, as in a jug or a jar placed in boiling water. JUG'GING, imp. JUGGED, pp. *jŭgd.* JUGGED HARE, a hare cut into pieces and stewed with wine and other flavorings.

JUGA, n. plu. *jō'gă* [L. *jŭgŭm,* a yoke]: in *bot.,* a name given to the ribs on the fruit of the umbelliferæ. JU'GATE, a. *-gāt,* applied to the pairs of leaflets in compound leaves. JUGUM, n. *jō'gŭm,* a pair of leaflets—*unijugate,* one pair; *bijugate,* two pairs—and so on.

JUGATA, n. *jū-gā'ta* [L. *yoked, joined; capita,* heads, being understood]: in *numis.,* two heads represented on a medal or coin side by side or joining each other.

JUGGERNAUT, n. *jŭg'gĕr-nawt* [Hind. *jagatnatha,*

lord of the world]: famous idol among the Hindus. See JAGGERNAUT.

JUGGLE, n. *jŭg'gl* [F. *jongleur;* OF. *jugleor*, a conjuror, a story-teller; F. *jongler*, to divert in any way, to juggle—from L. *joculārī*, to jest or joke—from *jŏcus*, sport, jest. It. *giocolare*, to juggle: Ger. *gaukeln*, to deceive by sleight of hand]: an imposture; a deception, a trick: V. to deceive by trick or artifice; to play tricks by sleight of hand. JUG'GLING, imp.: ADJ. playing tricks by sleight of hand; deceiving: N. the act or practice of; deceit; trickery. JUG'GLED, pp. *jŭg'gld*. JUG'GLER, n. *-glėr*, one who deceives by sleight of hand; a cheat. JUGGLERY, n. *jŭg'glėr-ĭ*, sleight of hand; trickery; imposture. JUG'GLINGLY, ad. *-lĭ*.—The term *Juggler*, now almost synonymous with conjuror, and applied to persons who perform tricks of legerdemain, originally designated the professional musicians who attended the troubadours and trouvères of Provence and n. France, either singing their poems, or, if the poets themselves sang, then accompanying them with an instrument, which was reckoned beneath the dignity of the poet himself. These musicians soon began to be also kept in the service of kings and princes, whence they received the name *menestrels* or *minstrels* (*Lat. minister*, a servant). The profession was at this time honorable, and good endowments were devoted to the maintenance of minstrels; and when the art of the minstrel ceased to be exclusively employed for the entertainment of courts, those of this profession formed a separate guild in some towns, as in Paris. But it gradually lost respectability. Rope-dancers, and all who sought to gratify the populace by sleight of hand or feats of agility, were designated by the name jongleur, until it became restricted to its present acceptation. The ancient Romans had their conjurors or wonder-workers (*praestigiatores*), their throwers of knives (*ventilatores*), and their players with balls and rings (*pilarii*). But the greatest proficients in everything of this kind are and have for many ages been the Hindus and Chinese. Some of their feats are utterly amazing.

JUGGS, or JOUGS, n. plu. *jŭgz*, sometimes JOGGS [F. *joug*, a yoke—from L. *jugum*, a yoke: Dut. *juk*, a yoke]: in *Scot.*, an old mode of punishment, being in form of pillory. It consisted of a collar or ring opened by a hinge to inclose the culprit's neck, and could be secured with a staple or padlock; and it was fastened by a chain of three or four links to a pillar or wall in some public place, such as a market cross, a market trone or weighing-post, a prison door, a church door, a churchyard gate, a churchyard tree, a tree beneath whose branches courts were held, or the like. The juggs were employed as a punishment both for ecclesiastical and for civil offenses. They may be traced as far back as the 16th c., and though they have not been in use for the last hundred years, they are still seen hanging at a few country

churches. They were used in Holland also, and probably in other countries.

JUG'LANS AND JUGLANDA'CEÆ. See WALNUT.

JUGULAR, a. *jô'gū-lėr* [F. *jugulaire,* jugular—from L. *jŭg'ŭlŭm,* the collar-bone, the neck]: pertaining to the neck or throat. N. the large vein of the neck.

JUGURTHA, *jū-gėr'tha,* King of Numidia: (reigned B.C. 118-106); d. B.C. 104; natural son of Mastanabal, who was son of King Masinissa. He was carefully educated with Adherbal and Hiempsal, sons of his uncle Micipsa, who, with the two other sons of Masinissa, succeeded Masinissa on the throne. After Micipsa's death, Jugurtha—who had by Micipsa's will been joined with Micipsa's two sons, Adherbal and Hiempsal, in the government—soon caused Hiempsal to be murdered (B.C. 118); and Adherbal fled to Rome. Jugurtha succeeded in bribing a great part of the Roman senate, and obtained a decision in his favor, freeing him from the charge of the murder of Hiempsal, and assigning him a larger share of the kingdom than was given to Adherbal B.C. 117. But Jugurtha soon invaded Adherbal's dominions; and notwithstanding injunctions by the Romans to the contrary, besieged him in the town of Cirta B.C. 112, and caused him and the Romans who were captured with him to be put to death with horrible tortures. Hereupon, war was declared against Jugurtha by the Roman people; but, by bribing the generals, Jugurtha contrived for years to baffle the Roman power. At last, the consul, Q. Cæcilius Metellus, proving inaccessible to bribes, defeated him B.C. 109, 108, so that he was compelled to flee to the Mauritanian king, Bocchus. Marius, who succeeded Metellus in the command, carried on the war against Jugurtha and Bocchus, till at last Bocchus delivered up Jugurtha to the Romans, who exhibited him at Rome in the triumph of Marius, B.C. 104, and then threw into prison to die of hunger. Jugurtha has obtained greater prominence in history than he deserves, on account of Sallust's history of the Roman campaigns against him.

JUICE, n. *jôs* [F. *jus,* broth, juice—from L. *jus,* broth, soup—akin to Skr. *yushas,* a liquid, juice: Sp. *jugo,* the juice of plants]: the sap of vegetables; the fluid part of animal substances. JUICE'LESS, a. *-lĕs,* deprived of juice; without moisture. JUICY, a. *jô'sĭ,* abounding with juice; moist; succulent. JUI'CINESS, n. *-sĭ-nĕs,* state of abounding with juice.—SYN. of 'juice': sap; fluid; humor; liquor.

JUJUBE, *jô'jûb* [F. *jujube,* a jujube—from L. *zĭz'yphum;* Gr. *zizŭphon:* Ar. *zifzuf,* the jujube-tree], (*Zizyphus*): genus of spiny and deciduous shrubs and small trees of nat. ord. *Rhamnaceæ.* The species are numerous. The COMMON JUJUBE (*Z. vulgaris*) of s. Europe, Syria, etc., is a low tree, which produces a fruit resembling an olive in shape and size, red, or sometimes yellow when

ripe. The fruit is dried as a sweetmeat, and forms an article of commerce. *Syrup of Jujubes* is used in coughs, fevers, etc.; but the *J. paste* or *Pâte de jujube* of the shops is made of gum arabic and sugar, without any of the dried jelly of this fruit. The jujubes of India (*Z. Jujuba*) is a similar small tree, with round or oblong fruit, sometimes of the size of a hen's egg.—A Chinese species of jujube (*Z. nitida*) has a very pleasant yellow fruit about an inch long; and other species not much inferior are found in Africa, S. America, and other warm countries.—The LOTUS (*Z. Lotus*), a shrub two or three ft. high, native of Persia, n. Africa, etc., produces in great abundance a fruit about as large as a sloe, and with a large stone, but having a sweet farinaceous pulp, which the natives of parts of Africa make into cakes resembling gingerbread. A kind of wine is sometimes made from it.—*Z. Spina Christi,* another native of the countries near the Mediterranean, is sometimes said to be the plant from the branches of which our Savior's crown of thorns was made, and is therefore called CHRIST'S THORN and JEWS' THORN, names which, for the same reason, are given also to *Paliurus aculeatus.* The fruit is about the size of a sloe, oblong, and pleasantly acidulous.

JUJUY, *ċhô ċhwē'*: province of the Argentine republic, bounded n. and w. by Bolivia, e. by Gran Chaco, s. by Salta; about 18,977 sq. m. The surface is well watered, and the soil is fertile and covered with luxuriant vegetation. Though mostly comprised within the tropics, the climate is mild and salubrious. The province has mineral wealth in gold, silver, copper, iron, and quicksilver. Fertile valleys in the eastern part of the province produce sugar-cane, wheat, tobacco, and rice. There are immense forests and an abundant supply of water. The provincial capital, also called Jujuy, a town of about 10,000 inhabitants, is connected by railway with Buenos Ayres, and has two banks, a custom-house, a national college, a normal school for girls, and 7 public schools. Pop., 54,405.

JUKE, v. *jûk* [OF. *juc,* a roost or perch; F. *jucher,* to roost, as a bird: Scot. *jouk,* to incline the head or body as in an act of obeisance]: to perch or roost, as birds usually do; to incline or bend the head: N. the neck of a bird. JUK'ING, imp. JUKED, pp. *jûkt.*

JULEP, n. *jô'lĕp,* or JU'LAP, n. *-lăp* [F. *julep*—from Sp. *julepe,* julep—from Pers. *julab*—from *gulap,* rose-water, also julep: mod. Gr. *zoulō,* I squeeze out juice; *zouălpĭŏn,* a drink composed of juices]: a mixture of water and sugar, etc., to serve as a vehicle for taking medicine; a beverage composed of brandy or whisky, or the like, with sugar and pounded ice, and flavored with mint; also called *mint-julep.*

JULIA, *jôl'ya* or *jū'lĭ-a:* B.C. 39—A.D. 14; only child of the Roman emperor Augustus, being his daughter by

his second wife, Scribonia. She was only a few days old when her mother was divorced. She was educated with great strictness; was distinguished for beauty, talents, accomplishments, and agreeable manners; and was married at a very early age, B.C. 25, to her cousin, Marcus Claudius Marcellus, son of the sister of Augustus. After his death she was again married, when little more than 17 years of age, to Marcus Vipsanius Agrippa, to whom she bore three sons and two daughters. He died B.C. 12, and Julia was given in marriage, B.C. 11, to Tiberius; his mother, Livia, stepmother of Julia, persuading Augustus to this, in order to secure the succession of Tiberius to the throne. The marriage was an unhappy one, and the conduct of Julia far from irreproachable; but Livia's hatred induced her to make exaggerated accusations to Augustus, and she so wrought upon his mind, that he astonished all Rome by suddenly declaring, B.C. 2, that his daughter had so far forgotten herself as to be guilty of the most shameless adulteries, making even the Forum the scene of her nightly vice. In this charge there seems to have been too much truth; but it is doubtful if there was any truth in the further allegation that Julia and her paramours had entered into a conspiracy against the life of the emperor. Julia was banished to the isle of Pandataria (now Ventotiene), near Naples, and a number of persons of high rank were put to death or banished for their alleged participation in her guilt. From Pandataria, whither her mother, Scribonia, accompanied her, she was removed to Rhegium (now Reggio), where she was allowed by Tiberius to remain destitute even of common comforts, till her death. Her son, Agrippa, was put to death by Tiberius, A.D. 14, shortly before the death of his mother. Her other sons died in early age. Her daughters survived her. The elder daughter, Julia, died A.D. 28, in the isle of Trimetus, on the coast of Apulia, whither she had been banished by Augustus 20 years before for adultery. The younger, the virtuous Agrippina (q.v.) died A.D. 33, in Pandataria, to which she had been banished by Tiberius.

JULIAN, a. *jūl'yan* or *jū'lĭ-an* [after *Julĭŭs* Cæsar]: denoting the system of computing time, as regulated by Julius Cæsar, in use in Great Britain till 1752, when it was superseded by legal enactment by the Gregorian, established by Pope Gregory XIII., 1582. JULIAN YEAR, 365 days, 6 hours—but see YEAR (see also CALENDAR). JULIAN EPOCH. See CHRONOLOGY.

JULIAN, commonly called *the Apostate,* on account of his renunciation of Christianity (full name, FLAVIUS CLAUDIUS JULIANUS), Roman Emperor: 331, Nov. 17—363, June 26 (reigned 361-363); b. Constantinople, son of Julius Constantius, brother of Constantine the Great. He and his brother Gallus, who were too young to be dangerous, were spared when Constantius II., son of Constantine, massacred the rest of the imperial family. They

were, however, removed to a castle in Cappadocia, where they were subjected to rigorous espionage. Julian's life was very miserable; his nearest kindred had been largely sacrificed to the ambition and jealousy of the new imperial professors of Christianity; and the monkish education which he received produced a strong detestation of the religion professed by his tormentors. He was fond of literature and speculation, and he instinctively turned away from the rude asceticism, gloomy piety, and barbarous janglings of *Homoousians* and *Homoiousians*, to the gayety, artistic taste, and intellectual meditativeness of the old Greek philosophers. He idealized the old Hellenic world, and with it its philosophic paganism, not noticing how greatly it had been modified by the penetrating ethical power of the Christianity which it rejected. Some of his teachers appear to have been (secretly) pagans, for the sudden change in the state religion brought about by Constantine had necessitated much hypocrisy, especially among scholars and government officials. At the age of 20, Julian was at heart a disbeliever in the divine origin of Christianity. On the death of his brother Gallus, he was removed by Constantius to Milan, but was subsequently allowed to go to Athens, the home of Greek learning, where he gave himself up to philosophical pursuits, and to the enjoyment of cultivated society. The emperor—though still jealous and suspicious—now conferred on him the title of Cæsar, and sent him to Gaul to protect it from the incursions of the Germans. Julian defeated the Alemanni at Strasburg 357, and compelled the Franks to make peace. His internal administration in Gaul was mild and judicious. His popularity, in consequence, became very great, and when Constantius ordered him to set out for the East, Julian's soldiers rose in insurrection, and proclaimed him emperor, offering him the alternative of acceptance or of instant death. He reluctantly acceded to their demands. The death of Constantius at Mopsocrene, in Cilicia, 361, Nov. 3, removed the only obstacle out of his way, and Dec. 11 he made a triumphal entrance into Constantinople. He now publicly avowed himself a pagan, but surprised both Christians and pagans by his edict of toleration. Yet he was not impartial, for he chose most of his officers from the professed followers of the old religion, and compelled the Christian soldiers to at least a seeming worship of the pagan gods, and to contribute to the restoration of the heathen temples. In 362 he made great preparations at Antioch, in the hope of bringing the war with the Persians to a successful termination; and in the following year advanced to Ctesiphon and across the Tigris, but treachery and lack of provisions necessitated his retreat. He was followed and attacked by the enemy, who were repeatedly repulsed, but in one of the engagements he was mortally wounded by an arrow. Julian was both a great monarch and a

great man. His rule, compared with that of many of the so-called Christian emperors, was just, liberal, and humane; and though only 32 years of age when he perished, he had composed a great number of orations, letters, satires, and even poems (collected and published by Spanheim, 1696). Among his lost works are his *Refutation of the Christian Religion,* and Memoirs of his German Campaigns, and his Diary. Julian appears to have been more attached to philosophy than religion, and to have more readily apprehended as truth what commended itself to the intellect, than what spoke to the heart. In literature he inclined to pedantry; and it has been observed that he lacked the manly Roman composure and the unconscious Greek spontaneity. See Neander, *Uber den Kaiser Julian;* Strauss, *Der Romantiker auf dem Throne der Cäsaren;* also the works of Mangold, Semisch, and Rode (1877) on Julian.

JUL'IAN, George Washington: statesman: b. Centreville, Ind., 1817, May 5, d, Irvington, Ind., 1899, July 7. He received a common-school education, was elected to the bar 1840, elected member of the legislature 1845, delegate to the free-soil convention at Buffalo 1848, representative in congress 1849, Dec. 3—1851, March 3; delegate to the first national republican convention 1856, representative in congress 1860-70, and chairman of the committee on public lands 8 years, and member of the committee on conduct of the war and on reconstruction. He joined the liberal republican party 1872, and from that time was an ardent democrat. He was surveyor-gen. of New Mexico 1885-89, strongly supported female suffrage, and published numerous articles, including *Speeches on Political Questions* (1872); *Political Recollections* (1884); and *Life of Joshua R. Giddings* (1892).

JUL'IAN CROSS, or Cross of St. Julian: in heraldry, a cross crosslet placed saltire-ways.

JULIEN, Alexis Anastay, Ph.D.: American geologist: b. New York, 1840, Feb. 13. He was graduated from Union College in 1859, was resident chemist at the guano island of Sombrero 1860-4, studied geology and natural history there, and on the establishment of the Columbia School of Mines became an assistant in the quantitative laboratory. He was in charge of the department of microscopy there, 1885-97, and subsequently became instructor in geology. He has published valuable scientific reports included in the Geological Survey's *Geology of Michigan,* vol. II. (1872); and *Geology of Wisconsin,* vol. III. (1880); etc.

JULIEN, *zhü-le-ăng',* Stanislas-Aignan (originally Noel): first Chinese scholar of his age in Europe: 1797, Apr. 13—1873, Feb. 20; b. Orleans, France. In 1823 he became a pupil of Abel Rémusat, who had recently been appointed to deliver a course of lectures on Chinese. In less than a year Julien had made himself master of the

principal difficulties of the language, and actually executed (in Latin) a translation of the great Chinese philosopher, Mencius, published at the expense of the Asiatic Soc. of Paris, and pronounced faultless. From that time his labors were directed chiefly to the languages and literature of the far East. Ancient and modern Chinese, Mantchu, Sanskrit, the Mongolian tongues, were familiar to him; and he is said to have known also almost all the European languages. His translations (into French) embrace the most important works in all departments of Chinese literature. He has given specimens of the Chinese drama in his *Hoei-lan-ki* (The Circle of Chalk, 1832) and his *Tchao-shi-koueul* (The Chinese Orphan, 1834); of Chinese romances, by his *White and Blue, or the Two Snake Fairies* (1834), and several other pieces in *Salmigondis* and the *Constitutionnel.* Julien was also the first who succeeded in translating Chinese poetry well—the constant use of allegory, and allusion to facts not known to Europeans, rendering it nearly unintelligible. But more valuable still than those purely literary productions are his translations of the great works that enable us to understand the religion and philosophy of the Chinese, such as the *Book of Rewards and Punishments* (1835), in which are contained the doctrines of Tao-sse; the *Book of the Way and of Virtue* (1841) by Lao-tseu, written B.C. 6th c., and forming the oldest and most illustrious monument of Chinese philosophy; and above all, the history of the *Life and Travels of Hiouen-Tsang* (1852), a work of immense importance for the earlier history and geography of India, and the knowledge of Buddhism. Julien wrote various treatises concerning the industry and arts of the Chinese; e.g. *Summary of the Principal Chinese Treatises on the Culture of Mulberry Trees and Silk-Worms* (1837), and *Treatises on the Art of Manufacturing Porcelain* (1856). In 1869 he published the first part of the *Syntax of the Chinese Language.* On the death of Rémusat he became his successor at the Collége de France, and in 1855 pres. of the college. He was also conservator of the Bibliothèque Impériale, and was specially charged with the oversight of the Chinese department.

JULIUS, *jūl'yŭs,* II. (originally Cardinal Giuliano Della Rovere), Pope of Rome: 1443-1513, Feb. 22 (pope 1503-13); b. Albizzola, near Savona; nephew of Sixtus IV. He vehemently opposed during his cardinalate the designs of Alexander VI. for the aggrandizement of his family, and one of his earliest measures on his election to the pontificate was to resume possession of the duchy of the Romagna, which had been bestowed on Cæsar Borgia. Julius was beyond all suspicion of nepotism or selfish designs of aggrandizement, but his public career during his pontificate was almost entirely devoted to political and military enterprises for the complete re-establishment of the papal sovereignty in its ancient

territory—Bologna, Ferrara, etc., and for the extinction of foreign domination and foreign influence in Italy. In pursuing his designs, for the purpose of compelling from the republic of Venice the restitution of the papal provinces on the Adriatic, Julius not only entered into the league of Cambray with Emperor Maximilian and Louis XII. of France, but had recourse to spiritual arms, by placing the republic under the ban of the church; and on the submission of Venice, apprehending the ambitious designs of Louis, he withdrew from the league, and entered into an opposite alliance, the 'Holy League,' to which Spain, England, and Switzerland were parties. Hence arose his bitter quarrel with Louis XII., in which the latter attempted, but ineffectually, to enlist the sympathies of the church against the pope. The Council of Pisa convened under Louis's influence was an utter failure; and the opposing council, fifth of the Lateran, assembled by Julius, but not brought to a close during his lifetime, completely frustrated the designs of Louis. It is alleged that, in his hatred of France, Julius was desirous of drawing even the Turks into the league; but this allegation is negatived by his entire career, one of the main features of which was a design for a holy war, in which he himself should take command. As an ecclesiastical ruler Julius has little to recommend him. As a political sovereign he is described by Ranke as 'a noble soul, full of lofty plans for the glory and weal of Italy'; and Prof. Leo considers him, with all his defects, one of the noblest characters of that age in Italy. He was a liberal and judicious patron of art, and a friend of the rising literature of the time.

JULIUS III. (originally Cardinal Gian Maria del Monte), Pope of Rome: 1487-1555, Mar. 23 (pope 1550-55): b. Monte San Savino, near Arezzo. He was one of the four legates of the pope under whom the Council of Trent was opened; and after his election to the papacy, 1550, he himself re-opened (1551) that council, which had been suspended more than two years. He is connected with English history as having sent Cardinal Pole to organize with Mary the reunion of the kingdom with Rome; but his general government of the church is marked by no very striking events, and his private character is sullied by the taint of nepotism.

JULIUS CÆ'SAR. See CÆSAR, CAIUS JULIUS.

JULUS, *jô'lŭs*, or IULUS, *ī-ū'lŭs:* genus of *Myriapoda* (q.v.), of the order *Chilognatha.* The whole of this order was included in the Linnæan genus Julus, and it is still the family *Julidæ* of many naturalists. The genus Julus, as now restricted, contains many species. They are called sometimes SNAKE MILLIPEDES and GALLY-WORMS. They resemble centipedes in form; but their feet are more numerous—some having 120 pair—and are so weak that the animal seems to glide along on its belly, the feet

moving like a wavy fringe on each side. The body is nearly cylindrical, not flattened. On any alarm, the animal rolls itself up in a coil. The *Juli* have no poison-fangs, like centipedes. They inhabit moist and dark places, and feed chiefly on decaying vegetable substances, sometimes also on decaying animal substances.

JULY, n. *jô-lī'* [after *Julĭŭs* Cæsar, born in this month]: seventh month of the year in our calendar, fifth in the Roman calendar, where it was called Quintilis (the fifth). Originally it contained 36 days, but it was reduced by Romulus to 31, by Numa to 30, and was restored to 31 days by Julius Cæsar, in whose honor it was named. By the Anglo-Saxons it was called *Maed-monath,* or mead-month, and *litha-aeftera,* or after-mild-month.

JULY-FLOWER, *jô'lī:* a corruption of *gillyflower,* a plant of many species, very common. See GILLYFLOWER.

JUMART, n. *jô'mârt* [Fr. *jumart,* a probable corruption of L. *chimæra,* a fabled monster]: the supposed offspring of a bull and mare, or she-ass.

JUMBLE, v. *jŭm'bl* [OE. *jombre,* to jumble; a frequentative of Eng. *jump:* Fris. *shumpeln,* to shake, as a wagon on a rough road]: to mix in a confused mass; to put together without order: N. a confused mixture; a collection without order. JUM'BLING, imp. JUM'BLED, pp. *-bld:* ADJ. mixed in a confused mass. JUM'BLINGLY, ad. *-lĭ.* JUM-BLES, n. plu. *jŭm'blz,* small sweet cakes made of flour, sugar, butter, and eggs.

JUMNA, *jŭm'nâ,* or JAMUNÁ, *yâ-mô'nâ:* river, principal feeder of the Ganges; perhaps the only Indian river of the first class which has its course wholly in Hindustan —the Indus, Sutlej, Ganges, and Brahmaputra all rising in Tibet. Its source, 10,849 ft. above the sea, is in lat. 31° n., and long. 78° 32′ e., at the s.w. base of the Jumnotri Peaks; and, after flowing 875 m., chiefly s.e., it joins the Ganges at Allahabad. After its first 100 m., during which it receives many affluents, of which the Touse is the largest, it enters the plain of Hindustan, lat. 30° 20′ n., and long. 77° 38′ e., having still an altitude of 1,276 ft. above the sea. Below this point, it is joined by many considerable streams: the Chumbul, the Sind, the Betwa, and the Cane on the right; and the Hindon, the Seengoor, and the Rind on the left. All the way downward, the Jumna is generally shallow, and, excepting as to descending rafts, unfit for navigation. By artificial means, however, its waters have been rendered doubly available both for commerce and for agriculture. From either bank a canal has been drawn, at once for the use of inland craft and for the purposes of irrigation. The one on the right side, begun 1356, leaves the main channel a short distance below the point of its emerging from the mountains; while the one on the left side, begun 1824, takes its departure a little farther down, near the

village of Fyzabad. Both rejoin the parent stream at Delhi. Historically and politically, the Jumna occupies a more prominent position than the Ganges itself above their junction. The former was necessarily the first to be crossed by the path of every invader from the n.w.; hence on it were built both Agra and Delhi, the two capitals of the Mussulman conquerors of India.

JUMP, n. *jŭmp* [prov. Sw. *gumpa*, to spring, to jump; *guppa*, to rock: Bav. *gumpen*, to jolt, to jump; *gumper*, the plunger of a pump: Lang. *ghimba*, to jump, to kick: Icel. *goppa*, to skip]: a leap; a spring; a bound; the space so passed over: V. to spring upward or forward, usually both; to pass to or over by a leap; in *OE.*, to agree; to coincide; to tally; to hazard; to risk rashly. JUMP'ING, imp.: N. the act of leaping or springing. JUMPED, pp. *jŭmpt*. JUMP'ER, n. *-ėr*, one who jumps; one of a certain religious sect (see JUMPERS): *provincially*, a pervert or convert from Rom. Catholicism to Protestantism; a long iron punch, with steel chisel-point, used for boring rocks before blasting; the maggot of the cheese-fly. JUMPING-JACK, the toy figure of a man whose limbs are made to move nimbly by jerking a string. JUMPING-UP, the knocking down of the end of a bar of iron upon the anvil so as to thicken the heated portion. TO JUMP TO A CONCLUSION, to decide without thought.

JUMP, ad. *jŭmp* [see JUMP 1]: in *OE.*, exactly; nicely; pat—from the OE. sense of JUMP, v. to agree; to tally.

JUMPERS, *jŭmp'ėrz:* name originally applied to participants in some Welsh religious meetings, because after the sermon and singing of a hymn they indulged in leaping and dancing after the example, as they said, of David. In the middle ages the same feature of worship was observed, and the participants were known as dancers. John Wesley found many Jumpers in Wales, and some writers claim the exercise to have been merely a bodily manifestation excited by the fervency of Methodist preaching. American Shakers are said to have indulged in leaping in religious meetings at one time, but now confine themselves to a swaying of the body.

JUMP'ING HARE (*Pedetes* or *Helamys Capensis*): South African rodent, *Spring Haas* of the Dutch colonists, generally placed near the jerboas in systems of zoology, but considerably differing from them. The head much resembles that of a hare, though the ears are shorter; the form of the body also is like that of a hare, but the hind-legs are very long and strong, like those of a kangaroo, and the toes both of fore and hind feet are armed with great claws. Its powers of leaping are extraordinary; it clears 20 or 30 ft. at a bound. Night is its time of activity, and it makes mischievous inroads on fields and gardens. Its flesh is eaten.

JUNCATE, n. *jŭng'kāt:* the correct spelling of JUNKET, which see.

**JUNCEÆ**, *jŭn'sē-ē or* JUNCACEÆ, *jŭn-kā'sē-ē:* **natural order** of endogenous plants, herbaceous, generally perennial, with creeping root-stock; narrow, often fistula leaves; regular flowers; the perianth 6-partite; the stamens six; the fruit a 3-valved capsule. This order is nearly allied to *Liliaceæ*, notwithstanding very great difference of aspect; for rushes (*Juncus*) are the best known examples of it. The species, about 200 in number, are natives mostly of cold and temperate climates.

JUNCITES, n. plu. *jŭn'sīts* [L. *juncus*, a rush]: in *geol.*, fossil stems and leaves apparently related to the JUNCACEÆ, *jŭn-kā'sē-ē*, or rush family.

JUNCTION, n. *jŭngk'shŭn* [L. *junctus*, joined, united; *junctĭōnem*, a joining: F. *jonction*]: the act or operation of joining; union; place or point of union. JUNC'TURE, n. *-tūr* [L. *junctūră*, a joint]: a seam; a joint; the line of place at which two bodies join; a critical or important point of time.

JUNCTION CITY, KAN.: city and county-seat of Geary County, at the junction of the Republican and Smoky Hill rivers, 135 miles west of Kansas City; and on the Missouri, K. & T. and the Union P. R.R.'s. The two rivers here form the Kansas River, and make an important shipping point for grain, flour and limestone. A government military post, Fort Riley, is located three miles east of the city. It was settled in 1858 and under a charter of 1870 is governed by a mayor and city council. The city owns the waterworks. Pop. (1910) 5,598.

JUNCTION VALVE: a two-way valve which unites two pipes.

JUNE, n. *jôn* [L. *jūnĭŭs*, June—from the anc. goddess *Juno:* F. *juin*]: sixth month of the year in our calendar, but the fourth among the Romans. It consisted originally of 26 days, to which four were added by Romulus; then one taken away by Numa, and the month was again lengthened to 30 days by Julius Cæsar, since whose time no variation has taken place. The Anglo-Saxons called this month *sear-monath*, or dry-month, and *midsumer-monath.*

JUNEAU, *jū'nō:* city and capital of Alaska; on the s. shore on Gastineau Channel, 10 m. from its entrance, near the entrance of Lynn Canal, and not far from the boundary of Brit. N. America; abt. lat. 58° 20′ n., long. 134° 20′ w. It is built along the shore at the base of precipitous mountains. The city has for years been supported by the gold-mines of the coast. Extensive veins of gold-bearing quartz, with many large stamping-mills, are in its immediate neighborhood. With the discovery of gold on the Klondike (q.v.) Juneau sprang into importance as the point of departure for the Klondike by the overland route: distance from Seattle to Juneau, 725 m. It has been called the key to the Klondike regions. It was settled in 1880, is incorporated, and has been selected by

congress as the capital of Alaska. From its situation in the mining region it has become a centre of trade in outfitters' articles and general supplies; while its exports, including gold, furs, and other products of Alaska, have grown to a considerable commerce. Among the manufactories are iron-works, breweries, sawmills, cigar factories, etc. In the vicinity are the Treadwell gold mine and the Silver Bow mines. Villages of the Auk and Taku Indians in the neighborhood are of interest to tourists. At Juneau is the United States land office for Alaska. Its public schools are well conducted, and its waterworks, electric-light system, and other public improvements give it all the essential conveniences of a modern American city. Cable service is established here. Pop. 1,900.

JUNE BEETLE, or FIG-EATER: a green and brown beetle (*Allorhina nitida*) of the family *Scarabæidæ*, common in the central and southern United States. The adults often eat figs, peaches, small fruits, corn, etc. The larvæ are white grubs which resemble their northern relatives (see MAY BEETLE), but are far less injurious, since they normally feed upon decaying vegetable matter in the soil, and not on living roots of plants. The adults may be decoyed away from ripe fruit by placing little piles of decaying fruit within their reach; but, since they are probably beneficial, they should not be destroyed.

JUNE'-BERRY: small tree or shrub, abundant in the United States and Canada, bearing various names in different localities, ranging from 3 to 30 ft. high, having early, white, and profuse flowers, and yielding a sweet, purple fruit as large as a currant or pea. The dwarf variety, known as the mountain whortleberry, is cultivated in some of the w. states for its fruit, and all forms of the species are popular for garden ornamentation.

JUNE BUG. See MAY BEETLE.

JUNG, *yûng*, JOHANN HEINRICH, generally called HEINRICH STILLING or JUNG STILLING: author, 'charcoal-burner, tailor, village schoolmaster, oculist, professor of physical science, and mystic': 1740—Sep. 12—1817, Apr. 2; b. of poor parents at Imgrund, in Nassau. After trying various occupations, he became a student of medicine at Strasburg, where he lived in intimacy with Goethe, who conceived a great liking for him, on account of his simple, pure, affectionate nature. Jung settled as a medical practitioner at Elberfeld, and distinguished himself as an operator for cataract. He is said to have improved the eyesight of more than 2,000 persons. He subsequently held professorships of economical and financial science at Marburg and Heidelberg. He died at Carlsruhe. His first publication was an autobiography, *H. Stilling's Jugend, Jünglingsjahre, Wanderschaft, Lehrjahre, Häusliches Leben und Alter* (3 vols. Berlin, 1777-8), which attracted much attention, and was followed by other publications continuing the history of the author's career.

In religion, Jung represents the *pietistic rationalists*, men who put little stress on the Scriptures, but are full of veneration (sometimes a sentimental enthusiasm) for the spiritual truths of Christianity. Jung was a fervent believer in the receiving of direct answers to prayer, and recounted many instances of it in his own experience. He was modest, and gentle—so kind, indeed, that he hated nothing except 'sects,' which, he maintained, were merely developments of pride.

JUNGERMANNIA, *jŭng-gėr-măn'nĭ-a:* a Linnæan genus of cryptogamous plants, containing a great number of species, which some modern botanists have divided into many genera, and some have even formed into an order, *Jungermanniaceæ*, though it is generally regarded as constituting a sub-order of *Hepaticæ* (q.v.). The distinctive characters of the sub-order are that the *spore-cases* open by four valves, and that the *spores* are mixed with *elaters*. The species much resemble mosses in appearance; some are very common in moist places. The tropical species are very numerous, and some of them are to be found even on the young shoots and leaves of plants.

JUNGFRAU, *yûng'frow* (the Maiden): one of the highest mountains of the Bernese Alps; on the boundary-line between the cantons of Bern and Valais; height 13,720 ft. It received its name either from the unsullied purity and dazzling brightness of the snow by which it is covered, or from the fact that no traveller had ever reached its highest point. Its summit was reached first by two Swiss gentlemen, named Meyer, 1811; and since by Agassiz, Prof. Forbes, and many others.

JUNG, Sir SALAR: also, JUNG BAHADUR, *jŭng ba-hâ'dûr*. See JANG.

JUNGLE, n. *jŭng'gl* [Hind. *jungal*, desert, forest: Skr. *jangala*, dry, desert]: in *India*, densely wooded land; the uncleared country; waste land. JUNGLY, a. *jŭng'glĭ*, abounding with jungles.—*Jungle* is now fully adopted into the English language, to designate those thickets of trees, shrubs, and reeds which abound in many parts of India, particularly in the unhealthful tract called Terai or Tarayani, along the s. base of the Himalaya; and in the Sunderbunds (q.v.) at the mouth of the Ganges. The jungles are often impassable, from the thick growth of underwood, tall grasses, and climbing plants. The soil is generally swampy, and fever and other diseases abound. Tigers, and other beasts of prey, elephants, boars, deer, and other quadrupeds are found in great numbers in these thickets, with gigantic snakes, and multitudes of monkeys. The jungle flora and fauna are peculiar, and the moisture and heat carry a tropical vegetation beyond its usual limits northward to the lower valleys of the Himalaya.

JUNGLE-FOWL, *jŭng'gl-fowl*, of AUSTRALIA: bird (*Megapodius tumulus*) which has been called also the MEGAPODE; totally different from the jungle-fowl of India. See FOWL. It belongs to the family *Megapodidæ*. All the species are large birds, with short wings and tail, and of slow, heavy flight. They are remarkable for thickness of legs (*tarsi*), and long and thick toes; and for their habit of heaping up mounds of earth, decayed leaves, etc., in which they lay their eggs, which are hatched by the heat produced by fermentation. The Australian jungle-fowl makes heaps sometimes 15 ft. high and 60 ft. in circumference at the base, under the shade of thick trees or shrubs, where the heat of the sun may not evaporate the moisture. In these heaps it makes holes of several ft. in depth, in which to deposit its eggs. How the young birds emerge is not known, nor whether they are assisted by the parent birds. The mounds of the jungle-fowl were at first supposed to be sepulchral tumuli. The jungle-fowl is mostly of brownish color. Its size is rather less than that of the common domestic fowl. The propensity to heap up earth is very early manifested by the young birds.

JUNGLY GAU, *jŭng'glĭ gow* (*Bos Sylhetanus*): species of ox, inhabiting Sylhet and other mountainous parts of n.e. India. It is nearly allied to the Gayal (q.v.) and to the common ox, and has more the appearance of some of the European domesticated breeds of ox than any of the other wild oxen of Asia. The jungly gau, although in a wild state it is seen only in places remote from the habitation of man, is easily domesticated. Its milk is very abundant, and of excellent quality.

JUNIATA, *jū-nĭ-ăt'a*, RIVER: picturesque, non-navigable stream in Penn., formed by the Little Juniata and Frankstown branch near Altoona, 1,150 ft. above the sea, flowing about 150 m., generally e., among hills whose summits are 800 to 1,500 ft. above the river, and emptying into the Susquehanna river at Duncannon, 14 m. n. of Harrisburg, and 345 ft. above the sea. Its principal affluent, the Raystown branch, is equally beautiful and tortuous. The Penn. railroad and the old Penn. canal follow its course, the former crossing it several times.

JUNIATA COLLEGE: a co-educational institution, located at Huntingdon, Pa.; established in 1876 under the auspices of the German Baptist Brethren. Special attention is given to the religious education of the students; one of its principal courses is the history and literature of the Bible. It has art, music, normal, and commercial departments, also a preparatory school. The courses lead to the degrees of bachelor of arts, and of English and sacred literature. There are in attendance 350 students, and 21 professors and instructors; and about 21,000 bound volumes and over 4,000 pamphlets in the library.

**JUNIOR**, a. *jūn'yėr* [L. *jūnĭŏr*, younger—from *juvĕnis*, young]: younger; not so aged: N. one who is younger than another. JUN'IOR'ITY, n. *-yŏr'ĭ-tĭ*, the state of being younger. JUN'IORSHIP, n. the state of being junior. JUNIOR OPTIME, *ŏp'tĭ-mĕ* [L. *optĭmus*, best—*lit.*, junior in the highest rank or division]: in *University of Cambridge*, a third-class-honor man in the mathematical examination.

JUNIPER, n. *jô'nĭ-pėr* [L. *junĭpĕrŭs*, the juniper-tree —said to be from L. *jŭvĕnis*, young; *parĕrĕ*, to produce: It. *ginepro*]: genus of trees and shrubs of nat. ord. *Coniferæ*, sub-ord. *Cupressineæ*, having unisexual flowers, the male and female generally on separate plants, and the fruit a fleshy *galbule* (popularly a *berry*), containing three small nuts. The species all are evergreen, and have small, narrow, rigid leaves, which are opposite, or in whorls of three or four, or imbricated in four rows. They are natives chiefly of temperate and cold regions in Europe, Asia, Africa, and America.—The COMMON JUNIPER (*J. communis*) is found in all parts of Europe, and n. Asia, and in the n. parts of N. America. Only in favorable circumstances does it become a tree of 15, 20, or at most 30 ft. in height: in general it is only a shrub 2 to 6 ft. high. The fruit takes two years to ripen; it is round, of a bluish-black color, with a whitish bloom; it is of the size of a small currant, and is produced in great abundance. The little nuts or stones of the fruit have on the shell three glands, which abound, especially before ripening, in an essential oil—*Oil of Juniper*—present also in the wood, particularly in the young wood. The wood is yellowish red, brownish in the heart, hard, and fragrant. When of sufficient size, it is much valued by turners. It is used also for veneering. The dry twigs, roots, and berries are used for fumigation. The berries have a strong and peculiar flavor. They are much used for flavoring gin, which derives its name from them (see GIN). They also enter into several medicinal preparations, being stimulant, sudorific, and diuretic. The bark of juniper may be made into ropes, and in some parts of the Highlands of Scotland, the roots are woven into the coarse baskets which are used for potatoes, peats, etc. Oil of juniper is lighter than water; specific gravity, 0.839. It is limpid and nearly colorless. It is obtained by distilling the unripe fruit, or the twigs, with water. The medicinal properties of juniper depend on the oil; six drops are a dose. SPANISH JUNIPER (*J. oxycedrus*) grows in arid situations in countries around the Mediterranean Sea. Its fruit is about the size of a hazel-nut; and from its fruit and wood is procured an essential oil of disagreeable odor, called *Huile de Cade* (q.v.), which is used in veterinary practice, particularly as a cure for scab in sheep. VIRGINIAN JUNIPER (*J. Virginiana*), the RED CEDAR of N. America, is an evergreen tree, often 30-50 ft. high, of conical form, with horizontal branches

and very small leaves; native of N. America, from Lake Champlain to the Gulf of Mexico. It grows in sandy or rocky places. It is often planted in pleasure-grounds in Europe, and thrives in Britain. The berries are small, and bright blue. The heart-wood is of a beautiful red color, and is valued by turners, coopers, etc. It is exported to England for making pencils. There are often found on the branches fungous excrescences called *Cedar Apples*, recommended as a vermifuge. The BERMUDAS CEDAR (*J. Bermudiana*) is a native of the Bermudas, a lofty tree, with very fragrant, reddish-brown wood, used for furniture, pencil-making, etc., also for lining cabinets, its flavor preventing attacks of moths and other insects. The Himalaya Mountains produce several species of juniper, trees of considerable size, beautiful appearance, and valuable wood. The only species of juniper which is a native of Britain is the Common Juniper, found chiefly in the more hilly parts. The SWEDISH JUNIPER of some shrubberies is merely a variety of the common juniper. JU'NIPERITES, n. plu. *-īts*, in *geol.*, fossil coniferæ, evidently allied to the juniper.

JUNIUS, *jūn'yŭs*, FRANCISCUS (FRANÇOIS DU JON): 1545-1602; b. Bourges, France: Prot. theologian. He desired to study law, but, accepting the principles of the Reformation, went to Geneva, studied classical philology and Prot. theology, became pastor of a Walloon congregation in Antwerp 1565, and chaplain to the Prince of Orange 1568. In 1573 the elector-palatine summoned him to Heidelberg, where he aided Tremellius in making a Latin translation of the Old Test., and he afterward became prof. of theology at Heidelberg Univ. and at Leyden Univ. His son, FRANCISCUS J., 1589-1677, Nov. 19; b. Heidelberg, was librarian to the Earl of Arundel, of England, for 30 years, became famous as a philologist, was author of many works—notably *Glossarium Gothicum* in 5 languages—and bequeathed his valuable MSS. to the Bodleian Library of Oxford.

JUNIUS, *jūn'yŭs*, LETTERS OF: famous series of political letters signed 'Junius,' which appeared in a London newspaper, *The Public Advertiser*, during the last year of the administration of the Duke of Grafton and the first two of that of Lord North, 1769, Jan. 21—1772, Jan. 21. They were 44 in number; besides which, are to be reckoned as from the same pen, 15 signed Philo-Junius, 62 business-letters (mostly very short) addressed to his publisher, Woodfall, and 10 to Wilkes (privately); and, in addition, 113 letters under various signatures. The first of the letters of Junius treats of the 'State of the Nation,' and may be said to strike the key-note of all the subsequent epistles. In it, the author singles out several leading members of the ministry, and boldly denounces their inefficiency; and the last of the letters closes somewhat suddenly the long indictment against ministers in the same spirit in which it had begun. No

sooner did the first Junius letter appear, than the court-party took the alarm. An invisible and dreaded censor was evidently moving among them—one who, though as yet the days of parliamentary reports were still far off, seemed cognizant of all the proceedings of both Houses, who not only knew intimately the public career of ministers, but was fully informed regarding the follies and the crimes of their private character. Sir W. Draper, who entered into controversy with this unknown adversary, was in the end overmastered, and reduced to mere humble complaint and confession. The Duke of Bedford, Lord Mansfield, and, chief of all, the Duke of Grafton, writhed beneath his lash—the last of these being more indebted for immortality to the splendid sarcasm of Junius than to any measure which it was his fortune to introduce. It cannot, however, be denied that the hatreds of Junius, though springing for the most part from his detestation of injustice and his contempt for incapacity, were increased and embittered by party spirit and personal dislike. His force is not in his argument or his proof so much as in his style. Some of the things on which he turns his keenest sarcasm are now recognized as meriting instead the highest praise. The style of these letters, though occasionally somewhat stiff and formal, is of the very highest class. Occasionally rising to lofty eloquence, it is always remarkable for force of expression, felicity of illustration and allusion, brilliant epigram and polished invective. Whoever Junius was, his life depended on his preserving his *nom de plume*. He had made too many enemies to be safe in acknowledging himself. From the day of the publication of his first letter, however, conjecture has been busy framing theories of the authorship. In 1855 a list was published of 37 persons to whom the authorship had been ascribed. Burke, Lord Shelburn, Colonel Barré, Lord George Sackville, Wilkes, Horne Tooke, Earl Temple, the American General Lee, Thomas Lord Lyttelton, among others, were supposed in turn to be Junius; but after the appearance of Taylor's *Junius Identified,* 1816, the general opinion was that Sir Philip Francis (q.v.) was the author. The Franciscan theory is supported by a weight of evidence, which, though entirely circumstantial, is sufficient, Macaulay thought, 'to support a verdict in a civil, nay, in a criminal proceeding.' The handwriting of Junius is the handwriting of Francis slightly disguised. Junius, as is evident from his letters, knew the forms of the secretary of state's office, was intimately acquainted with the business of the war office, attended the house of commons in 1770, and took notes of speeches, especially of those of the Earl of Chatham; denounced the promotion of Mr. Chamier in the war office as unjust to *Mr. Francis,* and was bound by some strong tie to the first Lord Holland. All these circumstances in the position of Junius correspond exactly with the history of Francis. Some of the best

authorities, however, hold that Francis was not Junius; they adduce the fact that those who knew Francis best saw in him no such capacities as the letters of Junius show, and that Lord Brougham confirmed this as the opinion of the contemporaries of Francis. See Chabot and Twistleton's *Handwriting of Junius Professionally Investigated* (1871); also *Junius, by Woodfall* (1850), and Macaulay's *Essays* (Warren Hastings).

JUNK, n. *jŭngk* [Scot. *junt,* a lump: Swiss *jante,* a haunch—representing the sound made by a lump thrown on the ground: parallel forms are *chunk,* a log of wood, and *chump,* a thick piece: Port. *junco,* a rush, a junk]: a lump or piece; pieces of old cable, rope, or cordage; salted beef sometimes supplied to ships for long voyages, so named as being hard and tough as rope-ends. JUNK-BOTTLE, a bottle, usually of green glass, made thick and strong. JUNK-RING, a steam-tight packing round the piston of a steam-engine.

JUNK, n. *jŭngk* [Chin. *chw'an,* a ship or boat: Mal. *jóng,* a vessel of considerable size: Port. *junco*]: Chinese, Japanese, or Malay vessel, often of large dimensions. It has a high forecastle and poop, and ordinarily three masts. Junks, although clumsy and incapable of much seamanship or speed, have proved themselves seaworthy on voyages extending even to America and Europe. The Japanese junk is considerably superior to the Chinese.

JUNKET, n. *jŭng'kĕt* [It. *giuncata,* dainty fresh cheese brought to market on fresh rushes—from It. *giunco;* L. *juncus,* a rush: F. *joncade,* a delicacy made of cream, rose-water, and sugar—from *jonc,* a rush]: curds mixed with cream sweetened and flavored; a sweetmeat: V. to feast secretly or by stealth; to feast; to frequent entertainments. JUN'KETING, imp.: ADJ. feasting: N. a private feast or entertainment. JUN'KETED, pp.

JUNKIN, *jŭn'kĭn,* GEORGE, D.D., LL.D.: 1790, Nov. 1—1868, May 20; b. near Carlisle, Penn.: educator. He graduated at Jefferson College 1813, held pastorates in the Assoc. Reformed and Presb. Churches, founded and became pres. of Lafayette College 1832, was pres. of Miami Univ. 1841-44, again pres. of Lafayette College 1845-48, and pres. of Washington College, Va., 1848-61. He was moderator of the Gen. Assem. of the Presb. Church 1844, a champion of the 'old school' branch of American Presbyterianism, a stanch Union man through the civil war, and author of a number of controversial works.

JUNKSEYLON, *jŭnk-sē-lōn',* or SALANG, *sâ-lâng':* island in the Bay of Bengal, lat. 7° 46′ n., and long. 98° 18′ e., near the w. coast of the peninsula of Malacca. It belongs to Siam, and trades chiefly with the British settlements of Malacca, Penang, and Singapore. It yields tin, edible birds'-nests, and Japan wood.

## JUNO.

JUNO, *jū'no,* AND HERA, *hē'ra:* in mythology, the Roman and Greek names of the queen of heaven, and wife of Jupiter, the supreme divinity. The Roman and Grecian conceptions have unfortunately been confounded, and their essential dissimilarity has been lost sight of—a dissimilarity as great as that which existed between the Roman and Greek character.

HERA [Gr. mistress], the Greek goddess, was daughter of Kronos and Rhea. She was sister of Zeus, and afterward became his wife. Her jealousy is proverbial, and was unfortunately too well founded, for Zeus was the reverse of a faithful husband. In the Homeric poems, she appears, on the whole, as an obstinate, quarrelsome shrew, whose temper is a source of frequent discord between herself and her lord, whom, however, she greatly fears. She is represented as often spitefully favoring persons who were the objects of the displeasure of Zeus, and has to be punished for her disagreeable ways. Zeus scolds and even beats her; and on one occasion, we read of his having tied her hands, and hung her up in the clouds. But she is, nevertheless, a female of majestic beauty, grandest of the Olympian dames. As the only wedded goddess in the Greek mythology, she naturally presided over marriage and at the birth of children. She rode in a chariot drawn by two horses; and in her famous temple at Mount Eubœa, her statue, made of gold and ivory, bore a crown, symbolic of her queenly dignity. Her favorite residences were Argos, Sparta, and Mycenæ; but she had sanctuaries in many parts of Greece. The Greek artists like to represent her as a majestic woman of middle age; with maternal dignity of mien, beautiful forehead, large eyes, and venerable expression. Homer repeatedly calls her 'the venerable ox-eyed Hera.'

JUNO [name from the same root as Jupiter], the Roman goddess, was the queen of heaven, and under the name of *Regina,* was worshiped in Italy at an early period. She bore the same relation to women that Jupiter did to men. Like the Greek Hera, she took a special interest in marriage, whence her name of *Juga* or *Jugalis* (the yoke-maker); but she was also a kind of female Providence, protecting woman from the cradle to the grave. Her epithets, *Virginalis* (goddess 'of virgins') and *Matrona* ('of mothers') indicate this. It is a very significant feature of the Roman character, that Juno was believed to be also the guardian of the national finances, watching over her people like a thrifty mother and housewife. A temple, containing the mint, was erected to her on the Capitoline as Juno *Moneta* (the money-coiner). She was besides the goddess of chastity, and prostitutes were forbidden to touch her altars. She had a multitude of other surnames. Her great festival was called the *Matronalia,* and was celebrated on the 1st of March. Her month (June) was considered the most propitious for fruitful marriages; and even yet, after 18

centuries of Christianity, this old Roman faith lingers superstitiously in the popular mind.

JUNOT, *zhü-nō'*, ANDOCHE, Duke of Abrantes, and Marshal of France: 1771, Oct. 23—1813, July; b. Bussey-le-Grand, in Côte-d'Or. He entered the army as a volunteer 1792, and distinguished himself in the early wars of the republic. In 1798 he followed Napoleon to Egypt, was there created general of brigade, and particularly distinguished himself at Nazareth, where, at the head of 300 cavalry, he put to flight 10,000 Turks, after a conflict of 14 hours. In 1807 he was appointed to command the army of Portugal. His army, after dreadful privations, reached Lisbon, and Junot, with the greatest expedition, made himself master of all the strong places in the kingdom, and reorganized his army. For his brilliant conduct at this time he was created Duke of Abrantes, and appointed governor of Portugal; but the brilliant commander showed himself weak in administration. Being defeated by Wellington at Vimieira, he concluded a convention at Cintra, returned to France, and subsequently served in Germany, Spain, Portugal, and Russia. In 1812 he was disgraced by Napoleon for a supposed want of energy, and sent to govern Illyria. This, with other causes, produced mental derangement. He was taken to his father's house at Montbard, near Dijon, and two hours after his arrival, precipitated himself from a window and fractured his thigh-bone. Amputation was performed, but Junot frantically tore off the bandages, and died some days afterward. His wife, LAURE PERRON JUNOT, the celebrated Duchess of Abrantes, gained notoriety for reckless extravagance like that of an oriental queen, and gained reputation in the literary world by her *Mémoires ou Souvenirs historiques sur Napoléon, la Révolution, le Directoire, le Consulat, l'Empire, et la Restauration* (Paris 1831-35), and by several minor works.

JUNTA, n. *jŭn'tă* or *jûn'tă* [Sp. *junta*, or *junto*, a meeting, an assembly—from L. *junctus*, joined, united]: in Spanish-speaking countries, a grand council of state. It was originally applied to an irregularly summoned assembly of the states, as distinguished from the cortes or parliament regularly called together by the authority of the king. In Cuba the term was adopted by the insurgents before the Spanish-American war, to designate the general legation of the Cuban republic abroad. This legation or junta was first appointed 1895, Sep. 19, by the Constituent Assembly that formed the insurgent Cuban government, which at the same time made T. Estrada Palma head of the junta and chief Cuban representative abroad, with authority to appoint ministers to all governments and to have control of Cuba's diplomatic relations and representatives throughout the world. The junta established its headquarters in New York, and was the organization through which the insurgents' friends outside

of the island communicated with the Cuban soldiers in the field during the Spanish-American war. JUNTO, n. *jŭn'tō*, a select council or assembly; a select body of men combined secretly for political purposes; a cabal; a faction.

JUPATÍ-PALM, *zhô-pâ'tē pâm* (*Raphia tædigera*): palm which grows on rich alluvial tide-flooded lands near the mouth of the Amazon. The stem is seldom more than 6 or 8 ft. high; but the leaves are often 50 or 60 ft. long, rise vertically from the summit of the stem, and bend out on every side in graceful curves, forming a magnificent plume. The leaves are perhaps the largest in the vegetable kingdom; they are pinnate, the leaflets about 4 ft. long. The leaf-stalks, which are often 12 or 15 ft. long below the first leaflets, and 4 or 5 in. in diameter, perfectly straight and cylindrical, are almost like birds' quills in strength and lightness, when dried, of a soft substance, with a thin, hard, glossy outer covering. They are used for various purposes, as for laths, window-blinds, etc. The interior part is soft enough to be used instead of cork.

JUPITER, n. *jô'pĭ-tėr* [L.]: in Roman mythology, chief god of the Roman state. The name is a modification of *Diovis pater* or *Diespiter* (*Diovis*, or *Dies* = *divum*, heaven), i.e., the Father of Heaven or the Heavenly Father. As such, Jupiter had all power over the phenomena of the skies; hence his numerous epithets, such as *Pluvius* (Rain-giver), *Tonans* (Thunderer), *Fulminator* (Lightning-hurler), and *Seranator* (Weather-clearer). But he possessed higher and diviner attributes. The future was spread out clearly before his all-seeing eye; the destinies of men were in his hands, and events were but the expression of his omnipotent will. But he was not careless of mankind. He revealed himself in a variety of ways to them, and taught men to interpret these mystic and symbolic revelations. Wonderful appearances in the sky, or unwonted circumstances happening on the earth, were the *media* of his communications; hence his surname of *Prodigialis* (Sender of Prodigies). As the national god of the Roman people, he went with them into battle (like the Jehovah of the Hebrews), fought for them, procured them victory, and, generally speaking, was their protector at home and abroad. This conception of Jupiter is shown in such names as *Imperator* (Ruler), *Victor* (Conqueror), *Stator* (Stayer or Stander-by). The strong sense of morality which marked the old Romans found its expression in their view of the character of the best and greatest (*optimus maximus*) of their gods. Jupiter was the guardian of law, justice, and virtue; oaths and all solemn engagements were made as to him ('in the sight of God,' as we say). He had temples erected to him at Rome under all his different names; but the principal one was that on the Capitol, whence he

had the title *Capitolinus*, and where, with beautiful significance, the statues of *Fides* (Faithfulness) and *Victoria* (Victory) were placed beside his own. When consuls or other magistrates entered on the duties of their office, or when the army was about to open a campaign, or a general returned victorious from war, sacrifices were solemnly offered to Jupiter, and his favor invoked. When the Romans began to know the anthropomorphic religion and literature of Greece, they foolishly proceeded to identify their own grave, majestic, and morally reputable Jupiter with the slippery, lustful, and immoral *Zeus* of the Greeks. Hence have originated much confusion and misconception. See ZEUS.

JUPITER: the largest planet of the solar system, and the fifth (excluding the asteroids) in order of distance from the sun. Its mean diameter is about 85,000 miles; polar diameter about 82,000; its mean distance from the sun 475,692,000 miles; its period of revolution round it 11 years $10\frac{1}{3}$ months; its orbit is inclined to the ecliptic at the angle of 1° 18′ 40.3″. The inclination of its axis is 3° 5′ 30″, so that changes in the seasons must be almost unknown; its volume is 1,300 times that of the earth, but its mass is only 300.857 times. Jupiter has five moons; the last was discovered by Barnard, at Lick Observatory, in 1892. The other four were discovered by Galileo in 1610 and are visible through an ordinary telescope. They are at average distances of from 267,380 to 1,192,820 miles from the planet; they appear to make one revolution on their axis while passing once round the planet. Europa, the smallest, has a diameter of 2,099 miles, somewhat less than that of our moon; Ganymede, the largest, has a diameter of 3,436 miles. The planes of their orbits are nearly the same as the ecliptic and the orbit of Jupiter. The disk of Jupiter is crossed in a direction parallel with the equator by three or four vividly marked bands or belts; other of these belts vary in density and distinctness. Spots also appear and remain for some time on its surface. In particular, a large red spot of varying dimensions has been observed from time to time. Its equatorial belt changes both in size and position slowly and gradually; the fainter belts also vary. The circular white spots are very permanent in latitude, but are not fixed in position one with another. The dark spots of the same size as the circular white spots are not so stable as they, and probably lie at the level of the equatorial belt. The large, irregular white spots near the equator make one rotation in 9 hours and 50 minutes. The matter at the visible boundary of Jupiter has a density about half that of water (the average density of the planet is 1.37 times that of water). The medium at the boundary is in the nature of a liquid. In it the great red spot and the circular white spots are located. In such a medium all motions would be slow and gradual and the shape and size of an object would be very per-

manent. The equatorial and polar belts may be located on the surface or at a higher level than the red spot. In middle latitudes within 20° of the equator the higher atmosphere carries a layer of dark matter. In this envelope are formed the openings that we call white spots, and by unequal distribution black spots. The belts may be assumed to be some sort of vapor of considerable density. The planet is at a high temperature, but not self-luminous. See PLANETS; SOLAR SYSTEM.

JU'PITER AM'MON. See AMMON.

JUPITER SERAPIS, *jō'pĭ-tėr sē-rā'pĭs*, TEMPLE OF: ruined temple at Puzzuoh, near Naples: affording a remarkable instance of the changes which have taken and are taking place in the relative position of the land and water on the earth. Only three of the original 46 pillars are standing. They rise out of the water, the pavement of the temple being at present submerged; but they bear evidence that they have been at one time submerged to half their height, which is 42 ft. The base of the pillars as high as 12 ft. is quite smooth; for the next 9 ft. they are penetrated by a boring shell, which is still active in the neighboring rocks. The water must have covered this portion of the pillars, and while the mollusks were busy, the lower 12 ft. must have been protected from their ravages by being buried in mud. The changes of level have been so gradual that the pillars have not been moved from their original position.

JUPON, *jŭ-pŏn'*, or JUST-AU-CORPS, *zhüst-ō-kōr:* a surcoat; especially the short, tight form of that military garment in use in the 14th c.

JU'RA: island, one of the Inner Hebrides; off the coast of the mainland of Argyle, Scotland, and having the island of Islay on the s.w. It is 27 m. long, and about 5 m. in average breadth. A ridge of bleak and rugged mountains traverses the whole length of the island, and rises in the *Paps of Jura,* in the s., to 2,566 ft. The w. coast is deeply indented by Loch Tarbert, which nearly divides the island in two. The w. shores are savage and rugged; the e. are pleasing in appearance, presenting green slopes and a belt of plain. At the n. extremity of Jura, and between it and Scarba, is the whirlpool of Corrievrekin (q.v.). About 600 acres are under cultivation. Oats, barley, potatoes, and flax are produced; and black cattle are reared for export. Pop. about 600.

JURA, *jō'ra,* Ger. *yō'râ,* F. *zhü-râ'* [Lat., from a word meaning *forest*]: range of mountains, of a peculiar limestone formation known as the Jura Limestone, extending n.e. from the angle formed by the Rhone and the Ain (with a gradually declining elevation), more than 450 m., to the upper part of the course of the Main. The Rhine, breaking through the Jura between Schaffhausen and Basel, divides it into two parts, the Swiss or French, and

the German Jura. The loftiest peaks are Reculet de Toiry, Grand-Colombier, Credoz, Dôle (which commands a splendid view of Mont Blanc), and Mont d'Or, all between 5,000 and 6,000 ft. in height. The Swiss Jura consists of a number of parallel chains with long, deep valleys between, and over it roads have been carried with great difficulty; but the German Jura is broken up by cross-valleys. In both parts of the range are numerous caves, which abound in magnificent stalactites, and in the bones of extinct animals; while in the Swiss Jura there are several instances of rivers of considerable size sinking into the ground, and reappearing after some distance, as the Orbe, the Doubs, and the Creuse. The s. portion of the range lies partly within the French dept. of Jura, to which it gives its name. Magnificent pine-forests are here a characteristic feature of the scenery.

JURASSIC, a. *jô-răs'sĭk:* in *geol.*, a system or series of formations with like characteristics, and containing fossil remains indicating a time occupying the first half of the Mesozoic period, and characterized by many changes in the distribution of sea and land, especially in the northern hemisphere, where the present continental areas were apparently represented by archipelagoes. The formations of this period take their name from their prominent exposure in the Jura mountains; but are known in Great Britain as the Oölites because there made up of granular (oölitic) limestones below the Cretaceous and above the Lias, from the latter of which the series is separated by no very definite boundary. In America synchronous formations are, indeed, called 'Juratrias,' and represent the transition from the Permian to the Cretaceous. The Jurassic is represented somewhat in South America and in the western United States, as in the highly fossiliferous 'Como stage' beds of Wyoming, and the auriferous state of California, but most strikingly in the brown 'bird-track' sandstones of the Connecticut valley, in Nova Scotia, and in the red rocks that crop out along the eastern foot of the Alleghanies from New Jersey to South Carolina. During this period most of the globe now dry land was covered with shallow seas which were the abode of a great variety of lowly fishes and reptiles. On land it was the height of the age of reptiles, and especially of dinosaurs (q.v.) and pterodactyls. Toward its close the progenitors of birds appeared in the shape of *Archæopteryx* (q.v.), and traces of mammals are found. Consult authorities mentioned under GEOLOGY and PALEONTOLOGY.

JURAT, n. *jô'răt* [Norm. F. *jurat*—from L. *jūrăt*, he swears; *jūrātus*, sworn]: a person sworn; one under the responsibility of an oath. JURATION, n. *jô-rā'shŭn*, in *law*, act of swearing; administration of an oath.

JURE DIVINO, *jū'rē dĭ-vī'nō* [Lat.]: phrase, meaning, *by divine right;* applied to a form of civil government or of church polity, as denoting not only its expediency and

its rightfulness for practical uses, but also the theory that it has been divinely established or authorized as exclusive of any other form.

JURIBALLI-BARK, n. *jū-rĭ-băl'ĭ-bârk* [*juriballi*, a Demerara wood]: in *phar.*, a bark said to be superior to cinchona bark in typhoid and malignant fevers. It is a cordial and purgative, and, when taken warm, a diaphoretic.

JURIDICAL, a. *jô-rĭd'ĭ-kăl* [L. *jurĭdĭcŭs*, relating to the administration of justice—from *jūra*, laws; *dicārĕ*, to proclaim, to pronounce: F. *juridique*]: pertaining to a judge; acting in the distribution of justice; used in courts of justice. JURID'ICALLY, ad. *-lĭ*. JURISDICTION, n. *jô'rĭs-dĭk'shŭn* [OF.]: legal power or authority; the power or right of exercising authority; the district to which the authority or power of dispensing justice extends. JU'RISDIC'TIONAL, a. *-shŭn-ăl*, pertaining to jurisdiction. JU'RISDIC'TIVE, a. *-tĭv*, having jurisdiction. JURIDICAL DAYS, days on which the courts can lawfully sit.

JURISCONSULT, n. *jô'rĭs-kŏn'sŭlt* [F. *jurisconsulte*—from L. *jurisconsultus*, one skilled in the law—from *juris*, of law; *consultus*, a lawyer; *consultus*, consulted: a man learned in law; one who gives his opinion in cases of law, particularly of Roman law.

JURISDICTION, in Law [see JURIDICAL]: authority which a court or judge has, to entertain a particular case and decide it. The general rule is, that if a court which has no jurisdiction to decide a particular case, does decide it, the judgment is a nullity. Many nice questions arise on the general question of jurisdiction.—Jurisdiction is classified as Original, in the case of a court which has primary jurisdiction over a cause; Appellate, over a cause appealed from a lower court; Exclusive, by only one tribunal; Concurrent, by more than one tribunal; also, Civil, Criminal, etc. See CONFLICT OF LAWS.

JURISPRUDENCE, n. *jô-rĭs-prô'dĕns* [F. *jurisprudence*—from mid. L. *jūrisprūden'tĭă*—from L. *jūris*, of law; *prūden'tĭă*, prudence, practical judgment]: science of law; knowledge of the laws, customs, and rights of men necessary for the administration of justice. JU'RISPRU'DENT, a. *-dĕnt*, understanding law: N. one versed in jurisprudence.—*Jurisprudence*, as a science, deals with the principles on which legal rights should be protected and enforced; this theoretic or speculative jurisprudence may be called the philosophy of law. In its literal sense, the term means merely knowledge of the law, and seems to have been so used in the Roman law, from which it has been borrowed. The word is often used in a popular sense to denote the whole body of positive law—i.e., a practical jurisprudence; but it is more correctly used in distinction from law as implying the system or supposed methodical scheme embracing the principles on which positive law is founded. A distinction is sometimes made

between general jurisprudence, which investigates the principles common to various systems of positive law, divesting these of their local, partial, and other accidental peculiarities; and particular jurisprudence, which confines itself to the particular laws of the United States, or England, or France, as an independent system taken by itself. Jurisprudence thus embraces a wide range, as treating of all those duties which are enforced between man and man; and yet it may be safely said, that lawyers, though dealing with the results of the science every day of their lives, seldom give much attention to the latent and general principles on which these results are founded. The science of speculative jurisprudence is, indeed, far from exact and has till within recent years made little advance since the days of antiquity.

MEDICAL JURISPRUDENCE: science which applies the principles and practice of medicine to the administration of justice and the preservation of the public health. It comprises the application of the leading principles of nearly all the physical sciences, such as meteorology, physical geography, anatomy, physiology, pathology, therapeutics, surgery, chemistry, botany, mental philosophy, and hygiene. The questions of more or less doubt that arise in courts of law and can be elucidated or adjudicated only by this science are included in the classifications: (1) those arising from the relations of sex; (2) those relating to injuries inflicted on the living organization; (3) those arising out of disqualifying diseases; (4) those arising out of deceptive practices; (5) miscellaneous ones in which expert medical testimony is required. To briefly particularize these classifications, the science is now regarded as indispensable in the determination of cases involving (1) impotence, sterility, hermaphroditism, rape, pregnancy, legitimacy, delivery; (2) infanticide, wounds, poisons, persons found dead; (3) mental alienation; (4) feigned diseases; (5) age, identity, presumption of seniorship, life insurance. In all these cases legal procedure is facilitated, if not directed, by the testimony of experienced physicians and surgeons. Insanity, set up as an excuse for crime; suicide, as a reason why a life insurance contract should be declared invalid; legitimacy and delivery, claimed as requisite for property inheritance; survivorship, sought to be determined for heirships where two related persons, like father and mother, brother and sister, die at the same moment; homicide or suicide, in cases of persons found dead; poisoning, whether accidentally or feloniously accomplished, are among the instances most frequently arising in courts of law wherein civil and criminal procedure would be wholly obstructed were it not for the aid rendered by this science. A medical witness, like an ordinary one, may testify to whatever has come to his own knowledge by sight or personal narration concerning a specific case at issue; a medical expert may do this and more, for without personally

knowing anything about the case, he is expected by reason of his special education to enlighten the court and jury on a statement of hypothetical facts. He testifies that if the statements submitted to him are true as alleged, the condition of the person must have been thus or so at the time specified, and could not have been otherwise. Medical jurisprudence is termed a modern science, is known also as legal or forensic medicine, and has a very extensive literature.

JURIST, n. *jô'rĭst* [F. *juriste;* Sp. *jurista,* a jurist—from L. *jus,* law, *jūra,* laws]: one who is skilled in law, especially civil law. JURISTIC, a. *jô-rĭs'tĭk,* having a juridical character.

JUROR, n. *jô'rėr* [F. *jureur*—from L. *juratōrem,* a swearer—from L. *jurārĕ,* to swear]: one who serves on a jury. NON-JURORS, *nŏn-jô'rėrz* [L. *non,* not; *juror,* I take an oath]: *Eng. hist.,* after the Revolution, a name applied to a considerable number of clergymen who refused to take the oath of allegiance to the new government.

JURY, n. *jô'rĭ* [Norm. F. *jurée,* a jury; F. *juri,* a jury —from *jurer,* to swear—from L. *jūrārĕ,* to swear]: in a *court of law,* a certain number of men selected for the purpose, who are constituted the judges of the truth of the facts in suits, and compelled to discharge this duty on the sanctity of their oath, but in subordination to a judge, who has distinct functions of control. JUROR, n. *jô'rėr,* also JU'RYMAN, n. one who serves on a jury. *Note.*—A GRAND JURY consists of not more than 23; a PETTY or SPECIAL JURY of 12—in *Scot.,* usually of 15.—Various theories have been adopted as to the origin and development of the trial by jury. It does not owe its existence to any positive statute, but has grown up insensibly, and has become inextricably interwoven with the habits of the people of Britain and the United States. It was generally supposed, until recently, that our Anglo-Saxon ancestors had the credit of having nursed the germ of this vigorous plant of liberty; and a cartoon in the new houses of parliament in London has embodied this popular belief. Recent researches, however, have shown that jury trial, as now known and practiced, did not exist in Anglo-Saxon times, though it has been the natural development and sequence of rudimentary forms of trial then prevailing. In ancient Rome, a criminal trial was conducted before a presiding judge and a body of *judices,* taken from a particular class, whose duty it was to determine the fact of the guilt or innocence of the accused; but they could exercise the prerogative of mercy, which does not belong to the modern jury. The result of the forms of trial usual with the Anglo-Saxons has been summed up by Forsyth in his *History of Jury Trial,* and he states these conclusions: Courts were presided over by a reeve, who had no voice in the decision, and the number

of persons who sat was usually 12. The assertions of parties were admitted as conclusive, when supported by the oaths of a certain number of compurgators. The testimony of the neighborhood was appealed to for the purpose of deciding matters of general concern. Sworn witnesses were appointed in each district, whose duty it was to attest all bargains and transactions, in order that they might be ready to give evidence in case of dispute. Every care was taken that all dealings between man and man should be as open and public as possible. It was by a gradual process of improvement that the precise functions of the jury were defined, and the jury system established as it has existed for centuries.

The functions of the judge and the jury are distinct: the judge has no right to decide the fact, nor the jury to decide the law; though there are classes of cases in which, practically, the jury cannot be prevented from deciding both. In some cases the separation of the functions of judge and jury requires very nice discrimination.

Before passing to the jury system as it exists in the United States—and, for the most part, in England—some differences pertaining to the Scotch practice may be noted. In criminal trials in Scotland, from 45 jurors 15 are drawn by lot, and the verdict of a majority suffices. There is also a verdict of 'Not proven' allowed to be given, and which is often preferred by the jury in cases where there is little moral doubt, though the legal evidence is insufficient. It is so far final in Scotland that the prisoner cannot a second time be put on his trial. The expediency of such a verdict has been objected to as fixing a stigma on the accused person; but the answer has been made, that it is most in conformity with the true result of the inquiry. In civil cases in Scotland, the jury consists of 12 persons, and the verdict of a majority suffices.

In the United States the right to trial by jury is guaranteed by the federal constitution (Art. III., section 2) in the following language: 'The trial of all crimes, except in cases of impeachment, shall be by jury.' This, however, has not been interpreted to mean that all offenders are entitled to jury trial. It refers to the graver offenses, such as were crimes at common law. Petty offenders are not entitled to a jury trial. By the fifth amendment to the federal constitution, 'No person shall be held to answer for a capital or otherwise infamous crime, unless on a presentment or indictment of a grand jury, except in cases arising in the land or naval forces, or in the militia when in actual service in time of war or public danger.' The sixth amendment to the same instrument guarantees the accused the right to a speedy and public trial by an impartial jury of the state and district where the crime charged shall have been committed. The seventh amendment preserves the right to a jury trial in suits at common law where the value of the controversy

exceeds $20. Nearly every state constitution repeats these guarantees. The varieties of jury known in the United States comprise the *grand jury*, drawn for indicting offenders against the criminal law; this jury, however, does not sit for trial; *jury de mediate linguæ* (now generally abolished by statute), composed equally of aliens and citizens; *petit* or traverse *jury*, which tries a cause and renders a verdict on the evidence; *special jury*, drawn by the assistance of the parties to an issue by striking from the list of jurors the names of such parties as may be objectionable to either side till 12 names are left; *struck jury*, specially chosen from the men whose occupations would make them familiar with the subject-matter of an issue—e.g., masons, carpenters, builders, on a suit growing out of a building contract; *coroner's jury*, summoned by a coroner to determine the cause of or responsibility for a death; *sheriff's jury*, of no determinate number, summoned by a sheriff for various inquisitions, and, in some states, to determine the sanity of persons.

Originally it was deemed essential that the jury be taken from the immediate neighborhood or *visne* where the cause of action arose, or the offense occurred. In this way the jurors anciently were also the witnesses. The idea that the jurors must reside in the same district or neighborhood is still largely preserved, though more extended views are taken of what constitutes a vicinage for this purpose. Thus in some states if competent jurors cannot be found in the county in which the trial is had, the courts are authorized to summon them from adjoining, or from any other counties in the state. As respects the number necessary to constitute a valid jury, it may be said that in regard to civil trials, while 12 is the number usually employed in the higher courts, a less, or even a greater, number may be taken if agreeable to both parties, and in inferior courts a number less than 12, usually 6, is customary in civil trials. In criminal trials, the *grand jury* consists of some number over 12 and less than 24, usually 23. The trial jury in criminal prosecutions must, in cases of felony, consist of 12, neither more nor less. In misdemeanors, the same rule originally prevailed as in cases of felony, and the number 12 was rigidly insisted on. It is now, however, provided in some of the states, that less than 12 may constitute a valid trial jury in cases of misdemeanor.

The grand jury as an existing institution consists of a number of persons drawn from the same class as the ordinary or petit jurors. They are sworn to the faithful discharge of their duties, and the court then delivers a charge to them, calling their attention to the duties they are to perform, either generally or with reference to any matters of special public interest falling within their jurisdiction to which the court thinks proper to direct their attention, and they can then proceed to business. All indictments are submitted to them, and, according as

they determine, after hearing the prosecutor's evidence, whether they are well founded or not, they indorse them 'true bill' or 'ignoramus' (or equivalent words). In the former case the accused is held for trial, in the latter discharged. It is the custom for them to make report to the court on such matters as seem to them of public interest and importance, and to make such recommendations as seem good to them. The report made by them of any offense from their own knowledge or observation, without a bill of indictment laid before them, is called a Presentment. A verdict of acquittal in a criminal proceeding finally disposes of the charge against the defendant both by the common law and, in this country, by the provisions of the federal constitution (and of most, if not all, of the tate constitutions) that no person shall 'be subject for the same offense to be twice put in jeopardy of life or limb.' It is for the legislatures of the various states, subject, however, to the constitutional right of the people to jury trial, to fix the qualifications of jurors. Thus it would be incompetent for the state legislatures to impose such restrictions as would either reduce the number eligible to jury duty to an abnormally small or select class, or to require such unusual or difficult qualification that only a privileged class could respond. As a rule, citizenship, good character, and a certain amount of general education are universally required. In addition, many of the states require the juror to be either a freeholder, householder, or owner of property to a certain amount. The limit of age is from 21 to 60 years, in some states to 70 years, of age. The rates of compensation, length and frequency of service, and causes of exemption differ in various states. As a general rule, the following, when actually engaged in their respective callings, are exempt from jury duty, though they are not disabled from acting if they choose to waive the privilege: ministers, attorneys, physicians, firemen, policemen, officers and privates in the state militia. In some of the states, certain public officials, such as the governor, members of the legislature, judges of courts of record, and sheriffs, are disqualified from acting as trial jurors. Grand and petit juries drawn in the federal courts are substantially the same as those of state and municipal courts.

Discussion has arisen within recent years as to whether the jury system should not be abolished and trial by judges alone take its place. Briefly, the arguments may be summarized as follows: In favor of the continuance of the system it may be said, that it is a school of legal and political education for the people; that it stands as a bulwark between the executive and the people in the protection of political rights; that jurors are more competent than judges to pass upon facts; that it requires each citizen to maintain an active interest in the administration of justice and, consequently, to see to it that the administration of justice is kept pure. Against the jury

system it may be urged, that the class of citizens best qualified to act as jurors, namely, active business men, are the least anxious to serve, and, in fact, seize every pretext to escape from jury duty; that it is an expensive, inconvenient, cumbrous system; that jurors for the most part are incompetent to seize upon and apply the evidence developed because not trained to the work; that passion, sympathy, fear, malice, anything and everything but the desire to do strict and impartial justice, render the ultimate decision in each case a work of chance. In the opinion of the majority who have carefully studied this question, the jury system as at present administered is totally inadequate to meet the demands of the age. It is the application of mediæval principles to a modern civilization. Yet, while it is easy to condemn the jury system, it is not easy to find an adequate substitute. One recently suggested is, that instead of requiring a verdict to be the unanimous conclusion of the jury, as at present, a majority decision be accepted. In the opinion of some acquainted with legal practice, this would work well in civil trials, and would be an improvement on the present system. But in criminal trials its application would be dangerous, because before an accused person is convicted there should be no reasonable doubt of his guilt in the mind of any of the jurors. While the people may eventually, perhaps in the near future, be willing to give up jury trials in civil cases, it is not probable that they will dispense with them in criminal prosecutions. For the history of the origin and development of the jury, consult: Pollock and Maitland, *History of English Law;* Thayer, *Preliminary Treatise on Evidence at the Common Law* (chapters ii.-iv.); Stephen, *Commentaries on the Laws of England* (Bk. V., ch. xiv.); Stubbs, *Constitutional History of England;* Cooley, *Constitutional Limitations.* For a discussion of the merits of the institution under modern conditions which is generally accepted as full and impartial, consult *The System of Trial by Jury,* by the late Mr. Justice Samuel F. Miller (21 Amer. Law Review, 859).

JURY-MAST [a supposed corruption of *injury-mast:* also said to be from F. *jour,* a day, as being only a temporary mast]: in a *ship,* a temporary mast placed instead of another one lost or carried away, as in a storm. JURY-LEG, among *sailors,* a wooden leg.

JUS ABUTENDI: a term meaning, literally, the right to abuse, but generally employed to denote that the party in question has every possible right over his property.

JUS DEVOLU'TUM [Lat., right having devolved]: formerly in Scotch ecclesiastical law, a phrase denoting the right which devolved on the presbytery to present or appoint a minister to a vacant benefice, if the patron did not within six months present a properly qualified person.

JUS GEN'TIUM [Lat. law of nations]: phrase now translated to mean a branch of International Law (q.v.).

JUS MARITI, *jŭs măr-ĭ'tī* [Lat., right of the husband]: phrase used in Roman law, and adopted in the Scotch law to denote the legal right accruing to a husband *qua* husband over his wife's property. See HUSBAND AND WIFE.

JUS RELIC'TÆ [Lat., right of the widow]: in Scotch law, the right of a widow to a share in the movable or personal property of her deceased husband. This is a vested or absolute right, and cannot be defeated by the husband's will. See HUSBAND AND WIFE: SUCCESSION

JUS REPRESENTATIO'NIS [Lat., right of representation]: phrase adopted by the Scotch from the Roman law; to denote that in heritable succession, also to a limited extent in movable succession, when one or more of the children of a deceased person have predeceased, the children of such predeceasing children represent their parent, and take his or her share.

JUSSERAND, *zhû-sĕ-rân*, JEAN ADRIEN ANTOINE JULES: French diplomat and author; b. Lyons, 1855, Feb. 18. He was educated at the Faculté de Lyon, in 1878, entered the French ministry of foreign affairs as consul at London; subsequently held other posts in the ministry, among them that of chief of the bureau of Tunisian affairs, and that of associate sub-director of the protectorate; in 1887-90 was councillor of the French embassy in London. In 1890 he became minister to Denmark, and in 1902 ambassador to the United States. His best known work is his *Les Anglais au Moyen Age: La Vie Nomade et les Routes d'Angleterre au 14me Siècle* (1884; trans. by Smith as *English Wayfaring Life in the Middle Ages* 1892), which was crowned by the Académie. Of his further writings, the following have appeared in English: *The English Novel in the Time of Shakespeare* (1890); *A French Ambassador at the Court of Charles II.* (1892); *Piers Plowman* (1894); *English Essays from a French Pen* (1895); *A Literary History of the English People*, vol. I. (1895); *Shakespeare in France under the Ancient Régime* (1899); etc.

JUSSIEU, *zhüs-sē-ŭh'*, DE: family which, for more than a century and a half, comprised some of the first botanists of the age.

ANTOINE DE JUSSIEU, 1686-1758; b. Lyon; d. Paris. He was prof. at the Jardin du Roi, and author of various works on botany; among them, *Appendix to Tournefort* (Lyon 1719). He made several voyages and journeys for collecting plants, being accompanied by his younger brother Bernard, his assistant.

BERNARD DE JUSSIEU, 1699-1777; b. Lyon; d. Paris; bro. of Antoine de Jussieu. He contented himself in assisting his brother and nephew, without seeking renown by the publication of his own important observations. Having been named supt. of the gardens at the Petit-Trianon 1759, he arranged the plants in accordance with

a natural system substantially the same as that which his nephew and pupil, Laurent de Jussieu, subsequently elaborated and perfected. As Bernard refused to make publicly known the principles on which his mode of arrangement was based, the glory of his labors devolved upon Laurent, who alone possessed the key to this botanical enigma.

ANTOINE LAURENT DE JUSSIEU, 1748-1836; b. Lyon; d. Paris; nephew of Antoine de Jussieu. At the age of 17, he began his botanical studies under his uncle Bernard de Jussieu, and, four years later, was nominated demonstrator and assistant to Lemonnier, prof. of botany in the Jardin du Roi. He at once began to reform the arrangement of the gardens and collections of plants under his charge, and to apply to them his own and his uncle's ideas in regard to the natural method. For 30 years he developed his novel views; and when his *Genera Plantarum,* which he began 1778, was completed 1789, the natural system was finally established as the true basis of botany (see BOTANY). In 1793, he became prof. of botany in the newly organized Jardin des Plantes, where he continued to teach till 1826, when blindness compelled him to resign his chair to his son Adrien. During his tenure of office, he founded the library of the Museum, one of the best in Europe. His papers in the *Annales du Museum* (1804-20), and his articles in the *Dictionnaire des Sciences Naturelles,* are of great value.

ADRIEN (LAURENT HENRI) DE JUSSIEU, 1797, Dec. 23—1853, June 29; b. Paris; son of Antoine Laurent de Jussieu. On taking the degree M.D. 1824, he presented as his thesis a memoir on the family of the *Euphorbiaceæ,* which attracted the attention of all botanists. His subsequent papers on the *Rutaceæ, Meliaceæ,* and *Malpighiaceæ,* also were noticeable. His memoir on the embryo of the *Monocotyledons* is a work of great merit. He was prevented by lack of health, from extending his *Cours Elémentaire de Botanique* (1848) into a complete and general treatise. In 1831, he was elected a member of the Acad., and, shortly before his death, he was nominated to the presidency of that body. Jussieu contributed many valuable papers to *Annales du Museum, Comptes Rendus,* and *Dictionnaire Universel d'Histoire Naturelle;* but his influence as a lecturer was of even higher importance, and has been manifested by the number of able botanists of various nations who were trained by him.

JUST, a. *jŭst* [F. *juste,* just, accurate—from L. *justus,* founded or resting on law, just—from *jus,* law, right: It. *giusto*]: that acts in accordance with the principles of law or justice; conformable to laws, human or divine; true; exactly proportioned; right; proper; righteous; upright; innocent; accurate; merited; deserved: AD. exactly; nicely; near or nearly; barely; almost. JUST'LY, ad. *-lĭ.* JUST'NESS, n. exactness; accuracy. JUST NOW, the present moment; immediately; a very brief time ago.

—Syn. of 'just, a.': incorrupt; equitable; honest; exact; nice; proper; fair; becoming; virtuous; pure; unforged; rightful; regular; orderly; impartial; normal; tasteful; in *OE.*, full—of 'justness': justice; reasonableness; equity; propriety; correctness; fitness; uprightness.

JUST: a spelling of Joust, which see.

JUSTE, Theodore, Belgian historian: b. Brussels 1818, Jan. 11; d. 1888, August. He was secretary of the Belgian board of education and as such made many beneficial changes in the national methods of instruction. He was a prolific writer on Belgian and French history, the most noteworthy of his work being: *Histoire élémentaire de la Belgique* (1838); *Histoire de la révolution Belge de 1790* (1846); *Précis de l'histoire du moyen age* (1847-9); *Le soulèvement de la Hollande eu 1813, et la fondation du royaume des Pays-Bas* (1870); *Guillaume de Taciturne* (1873); *Léopold I. et Léopold II., rois de Belges* (1878); *Les fondateurs de la Monarchie Belge* (27 vols., 1865-81); *La révolution de juillet, 1830* (1883); etc.

JUSTE MILIEU, *zhüst-mē-lyė* [Fr. the *just mean*]: phrase, denoting according to the common expression, the *golden mean*. After the revolution of 1830, this term acquired a political signification, and came into very frequent use, because of the declaration of the organs of Louis Philippe that the *juste milieu* was the only principle of government which could secure the welfare of France.

JUSTICE, n. *jŭs'tĭs* [F. *justice*, uprightness—from L. *jūstĭtĭă*—from *jūstus*, just]: conduct in accordance with law, human or divine; the giving to every one his due; merited punishment; impartiality; equity; an administrator of justice, a judge; a magistrate. Justiceship, n. the office or dignity of a justice. Chief justice (see Chief: Judiciary: Judge). Justice's clerk, in *England*, an officer, usually a solicitor, appointed by justices of the peace in England to assist them in their duties. As many of the justices themselves are not trained lawyers, and yet are called to administer various branches of the law and construe acts of parliament, the justice's clerk is a person of much local influence, practically guiding the justices in legal matters. Justice of the peace, magistrate in the inferior courts (see below). Lord chief-justice of England, the highest common and statute law judge, chief judge of the king's or queen's bench division of the high court of justice. Lord justice-clerk, in *Scot.*, the second highest judge in point of rank. Lord justice-general, in *Scot.*, the highest judge, called also lord president of the court of session. Justice in eyre, *ăr* [*eyre*, a corruption of L. *ĭtĭn'ĕrĕ*, on a journey]: a judge in circuit.—Syn. of 'justice': law; honesty; rectitude; retribution; punishment; right; integrity.

## JUSTICE.

JUS'TICE: one of the cardinal virtues of the ancients, and a principal department of social and moral duty in all ages. Practically, justice is considered to be clear and definite; but theoretically, there have been great disputes as to its ultimate analysis and the source of its binding quality. Some maintain that both the perception of what is just and unjust, and the powerful sentiment in favor of the one, and in opposition to the other, are intuitive in our nature, or make a part of that comprehensive intuition termed Conscience, or the Moral Sense. Others maintain that utility, or the general interests of mankind at large, is what determines justice, and that the sentiment enforcing it grows out of a regard to those interests. As thus stated, both views are open to objection. To the second is opposed the universally felt contrast between the Just and the Expedient, or the simply useful. We are frequently called to sacrifice expediency to justice, which seems to imply an obligation higher than the interests of mankind. *Fiat justitia, ruat cœlum* —'Let justice be done, although the universe should collapse.' Whence arises this paramount obligation?

An examination of specific claims shows that it is unjust without warrant to deprive a man of his liberty, his property, or his life; justice, therefore, requires respect for another's rights. At times we call the law itself unjust, in which case we sympathize with disobedience to it. This supposes that there is some higher law that should have preference—e.g., the moral law. Every unwarranted trespass, whether protected by civil law or not, is unjust—e.g., unfair judgment on conduct, breach of implied promise. In all such cases there are persons on whose rights other persons have trespassed. Such cases show justice negatively—that is, injustice—whence justice can be inferred by contrast. Herein lies the difference between Justice and Beneficence or generosity, this last being the mere overflowing of our disinterested fellow-feeling, which no one can claim as a legal right, and for whose neglect we are not punished before human tribunals.

These particulars, which are among the most commonly noted instances of the property in question, do not suggest any qualities present in all just actions, and absent in the opposite, except the existence of a right on the part of somebody, and also the sentiment which demands the punishment of those that violate such right. We are no nearer the solution of the original question, which is, Why should these rights be either determined or enforced on any other ground than expediency, or the well-being of mankind? It is admitted on all hands that the just and the expedient concur in the long-run, yet people demur to expediency as the basis or ground of justice. It seems to be natural for man to seek for justice a deeper *ground* than is supplied by so shifting, variable, and often superficial an element as expediency. It may

be a very helpful guide in the application of justice, and yet not be the foundation of the august obligation that gives justice its claim on men. It is felt that the foundation of justice is the same essentially as the foundation of moral obligation; and it is felt further that this foundation, to be secure and abiding, must be somewhat eternal and immutable. Hence, while the utilitarian theory of justice is evidently true in a limited range, and capable of a multitude of serviceable applications in practice, it seems unlikely ever to establish its claim to furnish men with the whole account of the reason or basis of the justice which man feels to be his duty.

Moreover, turning our thought to another department, it remains to be shown—as it is so often assumed—that justice is in its essence, and in the last analysis, distinct from *Love* or universal good-will. As it is manifested in human actions, it is concerned indeed with rights and claims much more than with love: this may be supposed the initial form, the first and lowest lesson of Justice. For its highest and complete form, we must look to man's conception of it as manifested in God; and when justice is considered in that divine sphere, it loses its whole essence of beauty and of power if it be thought of as excluding love—indeed, if it be thought of in any other wise than as actuated by love as by a life, and as being one of the grand departments in which love naturally develops its activity. And even for man, it will be conceded—even by those who see no proof of 'the Living God' whom Jesus Christ reveals—that there is no ideal of a *just* human character higher than the obedience to the law of universal *love* announced by Christ.

There is a *legal* justice which has an important sphere, because in its continually rising grades it is the truthful expression and the indispensable instrument of so much of justice as man can embody and organize in his laws from time to time. It is this necessarily mutable justice, this justice of the present expediency and utility, that needs to assign reasons for its existence and action. But the true essential justice—the loving concession of the rights of others—has its basis in the nature of sentient, free persons, and is manifest in their moral relations. As an activity it is traceable ultimately to the nature of God, but when found in him it is found as an essential element in our thought of his eternal being.

There is such a thing as intuitive, eternal, and immutable justice; but it is not out of relation to the concerns of this world, and it is correspondent with the highest interests of mankind; and its variable apprehension by man renders no less clear and unambiguous the fact of its existence. For some further suggestions, see ETHICS.

JUSTICE, DEPARTMENT OF: in the United States, an executive branch of the government, the supreme head of which, the attorney-general, is appointed by the President

and confirmed by the Senate. He is a member of the cabinet, according to the provisions of the Act of Congress of 1886, Jan. 19, ranking fourth, after the Vice-President, in the line of succession to the Presidency in case of a vacancy in that office, and his salary is $12,000 a year.

The office of attorney-general was established in 1789, almost at the beginning of the government, being provided for by the act that established the federal courts, but the department of justice was not organized into a separate department nor placed under the charge of the attorney-general until 1870, when by the act of June 22 of that year the establishment of this department brought under his control all United States district attorneys and marshals and secured uniformity in the trial and prosecution of cases. By this act the solicitors from the interior, navy and treasury departments and the examiner of claims of the state department were also brought under the control of the department of justice.

As head of the department of justice, the attorney-general is the chief law officer of the government, is the legal adviser of the President on any questions of law which may arise in the conduct of administrative affairs, and is also required by statute to give his advice and opinion, when requested, to the head of any executive department on any question of law arising in his department. The attorney-general represents the government in all cases at law to which it may be a party, but he rarely argues the case in person, this work being performed by his subordinates, whom he appoints, or by special counsel whom he is authorized to employ in cases of especial importance to the government. The attorney-general passes upon the validity of the title to public lands or other property to be purchased by the government for the erection of public buildings or for other public purposes; he also exercises general superintendence and direction over the attorneys and marshals of all the districts in the United States and the Territories as to the manner of discharging their respective duties. The supervision of the penal and reformatory institutions of the United States, the supervision of the revision and codification of the criminal and penal laws, the recommendation of judicial appointments, the administration of the national bankruptcy laws, etc., are other duties which come under the direction of the department of justice. The solicitor-general, whose office was created in 1870, ranks as second officer of the department of justice; takes the place of the attorney-general in the latter's absence, and also has charge of the conduct of cases in the courts at Washington.

JUS'TICE OF THE PEACE: inferior magistrate having a local jurisdiction in minor cases civil or criminal. In some states they are commissioned by the executive; in others they are elected by the people. Their functions

vary, but are usually carefully defined by the statutes in each state.

The institution of justices of the peace is very ancient in England, whence it was transferred with some modifications to this country. Previous to 1327, there were conservators of the peace in every county chosen by the freeholders out of the principal men of the county to perform similar duties, but by a statute of Edward III., a change took place in the practice, and ever since the election of justices has been taken from the people, and exercised by the crown. At first, however, they were still called merely conservators or keepers of the peace, and were not dignified with their present title. Gradually the office grew more important, in consequence of many statutes adding to their duties and jurisdiction, until in the 30th year of the reign of Elizabeth, the form of commission was revised, and was settled nearly as now used. The appointment of a justice of the peace has always stood high in popular estimation, and is eagerly sought after by men of station, especially in the rural districts.

The functions of justices of the peace in the United States are multifarious, and are either administrative or judicial. Thus in carrying out the provisions of the poor-law, if the parish officers require to remove a pauper from one parish to another, instead of intrusting this power to these officers, they are required to go before justices of the peace, so as to show the circumstances under which the removal takes place, and to satisfy the justices that the statutes on the subject have been complied with. But their great and distinguishing functions involve their power by summary action to prevent breaches of the peace, and concern also their judicial decision of what are called offenses punishable by means of summary convictions or orders. The theory on which all this jurisdiction is founded is, that while the graver crimes must be left to the ordinary remedy of an indictment, and the slighter wrongs to that of an action at law, there are many intermediate offenses not worthy of the solemnity of an indictment, nor yet fit to be left to the slow, expensive, and often elusory result of a civil action. Hence this intermediate class of cases arises, which justices can punish by fine and imprisonment swiftly and decisively. In like manner, justices punish personal assaults, vagrancy offenses, etc. Another important class of duties consists in the preparatory proceedings of all criminal trials; e.g. issuing warrants to arrest, and examining witnesses to see if there is a *primâ facie* ground of suspicion sufficient to warrant the committal of such persons to be tried before juries—holding them to bail or in default of bail committing them to jail. Their function in such cases has some analogy to that of a grand jury.

JUS'TICES, Lords, in England: persons occasionally appointed by the sovereign, from the times of the Nor-

man and Plantagenet kings, to act as his substitutes in the supreme government during his absence from the kingdom. Subsequent to the Revolution, these appointments have been made by letters-patent under the great seal, and the authority of parliament has sometimes been required in confirmation of their powers. On none of the absences of her present majesty from her kingdom has there been any delegation of the royal authority; and on one of these occasions, Lord Chancellor Lyndhurst stated in the house of lords that the law officers regarded it unnecessary to appoint lords justices, in which opinion he concurred. In case of the sovereign's minority, a regency has generally been resorted to. The powers of lords justices have been usually limited in the matter of pardoning and reprieving criminals, summons or prorogation of parliament, the disposal of public moneys in the treasury, and of church preferment in the gift of the crown. Lords justices have sometimes been appointed to carry on the government of Ireland instead of a viceroy; in modern times, this has been done only during occasional absences of the lord-lieutenant, or in the interval between the demise of one lord-lieutenant and the appointment of his successor.

JUSTICIARY, n. *jŭs-tĭsh'ĭ-ėr-ĭ*, also JUSTI'CIAR, n. *-ĭ-ėr* [F. *justicier*, a judge—from mid. L. *justĭcĭārĭŭs*]: in *Scot.* an administrator of justice; a chief justice. JUSTICIARY COURT, in *Scot.*, the highest criminal court. Its judges are seven of the judges of the court of sessions—viz., the lords president, justice clerk, and five others appointed by patent. The quorum of the high court consists of three judges. It sits usually in Edinburgh, but also holds circuit-courts thrice a year in some of the largest towns, and six times in Glasgow, the kingdom being divided for that purpose into three divisions or circuits. The jurisdiction embraces all crimes whatever; and it is an appellate court as regards inferior criminal tribunals. Its decisions are final, there being no appeal to the house of lords.

JUSTIFICA'TION, one of the most common terms of technical theology. In Protestant theology of the Calvinist type, it expressed an act of the grace of God whereby a sinner is absolved from the penalty of his sins, and accepted as righteous, not on account of anything in himself, but on account of the righteousness of Christ imputed to him. According to this view it is a purely forensic act—the act of a judge sitting in the forum, or place of judgment, and acquitting the condemned by an exercise of clemency, in consideration of the merits of another, who has paid the penalty which was justly his due. In this forensic sense of the word the apostle is understood by Protestants to speak (Rom. iii. 26) of God as 'the justifier of him who believeth in Jesus.' But in some minds the question arises whether such a merely legal or judicial aspect suffices to present God in his

activity toward men. They decline to adopt as full statement of the doctrine what they claim to have been only an illustration in the argument of Paul. Thus a modified form of the doctrine, advocated as more in accordance with the general teaching of the New Testament, is that justification is God's dealing with sinful man as if man were just or righteous in the sight of God—this dealing being according to the eternal grace of God, which is both wrought out and manifested in Christ Jesus.

In the doctrinal system of the Rom. Cath. Church, justification is considered not purely as a forensic act, or act of acquittal, but, further, as an infusion of personal righteousness, and as hence equivalent to what Protestants specially call *sanctification*. The distinction between the two things is in Prot. doctrine a cardinal distinction—the one being viewed as an *act*, the other as a *work;* the one proceeding from the divine clemency or grace once for all, the other from the progressive agency of the divine Spirit. A corresponding distinction is likewise found in the Rom. Cath. system between the *act of justification* and the *state* or *condition of habitual justice.*

The fact of justification through faith in Christ is set forth most plainly in the Epistles of Paul, and it has appeared to some as if there were a discrepancy in this respect between these writings and the Epistle of James. The one says: 'For if Abraham were justified by works, he hath whereof to glory; but not before God. For what saith the Scripture? Abraham believed God, and it was counted unto him for righteousness.' The other says: 'Was not Abraham our father justified by works? Ye see then that by works a man is justified, and not by faith only.' The opposition in these statements is merely verbal, and needs no real reconciliation. It admits of a variety of verbal reconciliations: one is to suppose that Paul is describing the inward reality of justification, which has no dependence on works, but only on faith, while James is speaking of its outward manifestation—of its reality as evinced in the Christian character and conduct, which necessarily expresses itself in good works, without which, in *this* sense, there can be no justification. Justification, in short, is independent of works in its origin and primary condition. Its origin is the grace of God—its only primary condition, acceptance of this grace, or *faith.* But it is dependent on works as its essential manifestation. Faith is not passive, but *active;* and a faith which is not active, which is not a spring of earnest Christian activity, is not a true faith. Such a faith cannot justify a man.

JUSTIFY, v. *jŭs'tĭ-fī* [F. *justifier,* to justify—from mid. L. *justĭfĭcārĕ*—from L. *justus,* just; *făcĭō,* I make]: to prove or show to be right or just; to vindicate as right; to pardon or clear from guilt; in *theol.,* to accept and treat as just or righteous for the sake of the merits of Christ Jesus; in *printing,* to form even or true lines

of; to adjust; to conform exactly. JUS'TIFYING, imp.: ADJ. that has the quality of absolving from guilt. JUS'TIFIED, pp. *-fīd:* ADJ. treated as just or righteous. JUSTIFIABLE, a. *jŭs'tĭ-fī'ă-bl* [F.—L.]: that may be justified; defensible by law or reason; excusable; warrantable. JUS'TIFI'ABLY, ad. *-blĭ.* JUS'TIFI'ABLENESS, n. *-bl-nĕs,* the quality or possibility of being defended or vindicated. JUS'TIFIER, n. one who justifies; one who frees from sin or guilt by pardon. JUS'TIFICA'TION, n. *-fĭ-kā'shŭn* [F.—L.]: a plea of sufficient reason; vindication; defense: in *law,* the defense in an action for libel or slander, in which it is acknowledged that the libel as charged was made, but is asserted that the facts were as represented: see LIBEL. In *theol.,* deliverance by pardon from past sins; the treating of sinful man as if he were just or righteous in the sight of God, according to the eternal grace of God which is both wrought out and manifested in Christ Jesus. JUS'TIFICA'TORY, a. *-kā'tẽr-ĭ,* tending to justify; vindicatory. JUSTIFIABLE HOMICIDE, in *law,* the killing of a human being by another without incurring legal guilt; e.g., any killing in self-defense or to preserve one's own life. JUSTIFYING BAIL: a term used to denote that the parties who have been produced as bail have been able to justify themselves in spite of any exceptions taken by the opposition.—SYN. of 'justifiable': defensible; vindicable;—of 'justify': to absolve; maintain, defend; vindicate; excuse; exculpate; warrant; clear; pardon.

JUSTIN, *jŭs'tĭn* (JUSTINUS, *jŭs-tī'nŭs*) I., or JUSTIN THE ELDER: Roman Emperor of the East: 450-527, Aug. 1 (reigned 518-527); b. in Dacia, of barbarian parents. He entered as a private into the emperor's body-guard, of which he rose to be commander. He held this last post till the death of Anastasius I., whom he succeeded on the throne. Feeling that, from his total lack of learning, he was unfitted to direct the internal civil administration, he wisely assigned this duty to the quæstor Proclus, whose administration gave general satisfaction. In 519, he entered into an arrangement with the pope, which resulted in a cessation of hostilities between the Greek and Latin churches. In 523, he resigned to Theodoric, King of Italy, the right—which till this time the eastern emperors had always exercised—of appointing 'consuls' in Rome; and the same year he became involved in a war with the king of Persia. Some time before his death, he associated his nephew Justinian (q.v.) with himself in the government.

JUS'TIN (JUSTI'NUS) II., or JUSTIN THE YOUNGER: Roman Emperor of the East: d. 578 (reigned 565-578); nephew and successor of Justinian I. He espoused Sophia, niece of Empress Theodora, a beautiful and able, but revengeful woman. His rule was weak and despicable. Through the influence of the empress, Narses (q.v.) was dismissed from the exarchy of Ravenna, though at the

time Justin was fully aware that the Longobards were meditating an invasion of Italy. The joy of these savages, on hearing of the disgrace of the one man whom they dreaded, was excessive; and in 568 they burst like an avalanche upon Italy, which from this time was forever lost to the Greek Empire. In the midst of a disastrous war with Khosrû, King of Persia, Justin died, after appointing Tiberius, one of his generals, as his successor. Justin had been insane from 574, from which time till his death the supreme authority was in the hands of the empress.

JUS'TIN (sometimes JUSTINUS FRONTINUS or M. JUNIANSUS JUSTINUS): Roman historian who lived at some time before the 5th c., and probably in the 3d or 4th c., though some assign him an earlier date. His History—of great value as our only authority on many important points—is merely a selection of passages from the *Universal History* of Trogus Pompeius, a work now lost.

JUS'TIN, or JUSTI'NUS (MARTYR; also the APOLOGIST, sometimes the PHILOSOPHER): one of the Fathers, and, after Tertullian, the most distinguished apologist of the Chris. Ch.: b. probably near the beginning of the 2d c.; martyred between 148 and 165; native of Flavia Neapolis, a Roman city erected on the site of the ancient Sechem, in Samaria. His father Priscus was a heathen; Justin was educated in the religion of his father. He became ardent student of the philosophy of his age, beginning with the school of the Stoics, finally adhering to that of the Platonists. With the last, as he relates, was at first highly satisfied; but, as he was one day wandering along the sea-shore, he encountered a man of mild and venerable aspect, who created in Justin's mind a desire for higher knowledge than Plato had reached, referring him to the study of the Jewish prophets, and through them to the great Christian teacher whom they foretold. The result was his conversion to Christianity, at some date between 119 and 140. After his conversion, he retained the garb of a philosopher, but, as a Christian philosopher, he strove by his writings and his instructions to bring others to the truth which he had himself discovered. He is said to have been beheaded in the reign of Marcus Aurelius, because he refused to offer sacrifice to the heathen gods. His death is attributed by the ancients to the enmity and malignant arts of the Cynic philosopher Crescens. The works of Justin, though not very voluminous, are highly interesting and important. They are not those of a scientific theologian, building up a definite system of philosophical doctrine. The key-note of his theology is that Jesus is the Christ, the Son of the Living God. Justin centres all creed, as well as all practice and Christian sentiment, on this grand and vital fact. Yet his early Platonic training gave a noticeable tinge to some departments of his thought. The books ascribed to him

with certainty are two *Apologies for the Christians,* the first addressed 'to Antoninus Pius' (emperor), the second 'to the senate;' a *Dialogue with Tryphon the Jew,* which professes to be the record of an actual discussion at Ephesus. The *Address to the Greeks* is no longer deemed genuine. *The Exhortation to the Greeks,* the *Letter to Diognetus,* and a work *On the Monarchy of God,* an argument against the polytheism of paganism, and other works once ascribed to Justin, are certainly spurious. The first ed. of his works is that of Robert Stephens (Paris 1551). The Benedictine edition of Justin, by Maran, appeared 1742; and Otto's—the best—at Jena, 1842-46. See Semisch's Monograph (1842) and Aubé's (Par. 1874) on Justinus.

JUSTINIAN, *jŭs-tĭn'ĭ-an,* or JUSTINIANUS, *-tĭn-ĭ-ā'nŭs,* I., FLAVIUS ANICIUS (THE GREAT), Emperor of the Eastern Roman Empire: 483-565, Nov. 14 (reigned 527-565); b. in the village of Tauresium, which afterward grew into the splendid city of Justiniana, site of the modern Kustendje. Although of obscure parentage, he shared the success of his maternal uncle, Emperor Justin, being invited at an early age to Constantinople, where he received a careful education, and if the reports of his courtly biographers can be accepted, attained considerable eminence in philosophy, theology, and law, as well as in the more elegant pursuits of poetry, music, and architecture. When his uncle was elevated to the purple, 518, he appointed Justinian commander-in-chief of the army of Asia. The tastes of Justinian, however, inclining him rather to civic pursuits, he declined this appointment, and remained attached to the court of Constantinople. In 521, he was named consul, and during the remaining years of the reign of his uncle, he continued to exercise great influence. In 527, Emperor Justin, by the advice of the senate, proclaimed him his partner in the empire. Justin survived the step but a few months, and Justinian as sole emperor, was crowned, with his wife, the famous Theodora, whom, despite of her more than dubious antecedents as an actress, he had raised to the position of his wife. Justinian, on his accession, was in his 45th year. His reign, which extends over 38 years, is the most brilliant in the history of the late empire. Although himself without the taste or the capacity for military command, he had the fortune or the skill to select the ablest generals of the last days of Roman military ascendency. Under the direction of his generals, and especially of the celebrated Narses (q.v.) and Belisarius (q.v.), his reign may be said to have restored the Roman Empire, at least in outward appearance, to its ancient limits, and to have reunited the East and West under a single rule. In his first war—that with Persia—he concluded a treaty by which the crisis that had long threatened was at least warded off; but the rejoicings which celebrated its termination had almost proved fatal, by a

domestic revolution, to the authority of Justinian himself. A conflict of the so-called Blue and Green factions in the circus in 532 was but an outburst of political discontent, which went so far as to elect a rival emperor, Hypatius. Justinian himself was struck with dismay, and had made preparations for flight; but the vigor and determination of Theodora arrested the revolt. Narses, with a relentless hand, repressed the tumults, 30,000 victims having, it is said, fallen in a single day. By the arms of Belisarius, the Vandal kingdom in Africa was re-annexed to the empire; and the same general, conjointly with Narses, restored the imperial authority as well in Rome as in n. Italy and a large portion of Spain. One of the most extraordinary, though in the end ineffective, works of the reign of Justinian was the vast line of fortifications which he constructed, or renewed and strengthened, along the e. and s.e. frontier of his empire. These works of defense, and the construction of many public buildings both in his capital and in other cities of the empire, involved an enormous expenditure, and the fiscal administration of Justinian, in consequence, pressed heavily on the public resources, but it is admitted to have been ably and uprightly conducted. It is, however, as a legislator chiefly that Justinian has gained renown. Immediately on his accession, he set himself to collect all legislative enactments still in force; and to do this thoroughly, he first compiled a *code,* which comprised all the constitutions of his predecessors (527-529): see CODE. The authoritative commentaries of the jurists were next harmonized, and published under the title *Digesta Pandecta* (529-533): see PANDECTS. The code was republished 534, with the addition of Justinian's own constitutions. His third great legal undertaking was the composition of a systematic treatise on the laws, for the guidance of students and lawyers. This was published a short time before the *Digest,* under the title of *Institutiones,* i.e., 'Institutes.' All these works were accomplished under careful superintendence and direction of Tribonian, and were originally in Latin. The later treatises which Justinian caused to be written were in Greek, and were entitled *Novellæ,* i.e., 'New Works.'

The character of Justinian as a ruler contrasts favorably with that of most of the emperors, whether of the earlier or the later empire. His personal virtues were of a class and in a degree seldom united in one of such station; and his public administration, with the single exception of that of ecclesiastical affairs, in which he was an arbitrary and imperious intermeddler, evinces great ability, and just and upright intentions His intermeddling with the church consisted chiefly in his attempts to conciliate various heretical sects, sometimes by framing a compromise in doctrines; or, if failing thus to secure uniformity in doctrine, then seeking to compel it by persecutions more or less severe, for dissentients. Justinian was

himself a student of theology and a writer on controverted points; yet he seems to have held strangely varying opinions.

JUSTINIAN II., surnamed RHINOTMETUS, Emperor of the Eastern Roman Empire: 669-711, Dec. (reigned 685-95, 704-11); b. Constantinople; son of Constantine IV. He succeeded his father when 16 years old, made a truce with the Arabs which gave them a command over Asia Minor, was defeated by the Bulgarians 688, and by his bloody persecution of the Manichæans and extreme extortion of the means of gratifying his sumptuous tastes drove his subjects into rebellion. In 695 they rose, seized him, cut off his nose, and banished him to Cherson, in the Crimea. He escaped 704, secured an army of 15,000 Bulgarians, seized Constantinople, massacred his rivals and thousands of their adherents, provoked a second rebellion by his cruelty and rapacity, and was assassinated in Asia Minor.

JUSTLE, v. *jŭs'l* [see JOSTLE]: to rush against each other; to push; to drive: N. a shock; a slight encounter. JUSTLING, imp. *jŭs'lĭng*. JUSTLED, pp. *jŭs'ld:* N. the act of striking another with a slight shock.

JUT, v. *jŭt* [another spelling of JET: F. *jeter*, to cast, to throw—from L. *jactārĕ*, to throw]: to project beyond the main body; to run against. JUT'TING, imp.: ADJ. shooting out; prominent. JUT'TED, pp. JUT'TINGLY, ad. *-lĭ*. JUT-WINDOW, a window that projects from the line of a building.

JUTE, n. *jôt:* fibre of a plant common in Bengal—also the plant itself. The fibre is produced from two species of *Tiliaceæ*, the *Corchorus olitorius* and *Corchorus capsularis*, two plants alike in qualities, though slightly different in appearance, and sown indiscriminately; the first having round seed-pods and reddish stalk, the latter long seed-pods and bright green stalk. From the fibre, which is the cheapest known, are produced gunnies, gunny-cloth and cordage, and from the finer qualities carpets, shirting, coat-linings, etc., are made. It is extensively used for mixing with silk, cotton, and woolen fabrics, and also in paper-making, while the leaves are eaten in many places as food.

Although indigenous to the tropics, Bengal being the largest jute-growing country, the plant grows in most climates and on all kinds of soil, rich alluvial lands, and lands subject to salt-water tidal influences particularly favoring its production. It is an exhausting crop for the soil. The plant, if weeded once, requires no more attention till cutting time. It grows to a height of 12 ft., having a single stalk without branches or leaves till near the top, and will flourish though flooded with two ft. of water for a month at a time. In Bengal, the plant is cut while in flower, about three months after sowing. Cut close to the ground, stripped of leaves and branches, it is

tied in bundles and steeped 10 to 20 days in water, to loosen the fibre by rotting the outer bark. After steeping, the plant is beaten till the fibre only remains, which is cleaned, dried, and made into 'drums' of 70 or 80 lbs. If for exportation, it is pressed into bales of 300 lbs. and more. Fine Jute has a beautiful glossy golden appearance, and is soft and silky to the touch. Great importance attaches to length and strength of fibre.

The first mention of the word Jute is in 1796, in the manuscript commercial index of the court of directors of the E. India Company. It is the Bengali name used by the natives of Cuttack and Balasore, where the first European manufactories were established in the middle of last century. In 1829, the total export from Calcutta was 20 tons, value £60. In 1833 it had increased sixteenfold, and about 1864-5 the increased demand caused Jute cultivation to extend to other districts. England, Bombay, and the United States originally divided the exports of Jute, and till the war of secession N. America took the largest share of the gunnies (see GUNNY BAGS). Jute and gunnies are now exported from Bengal largely to France, Australia, and other parts of the world. Jute grown in England is not remunerative. It has been successfully grown in small quantities in the southern United States.

Gunnies are classed as Nos. 1, 2, and 3. No. 1, thick and close woven, is used as bagging for sugar, fine grains such as linseed or rape-seed, and similar products; No. 2, also close woven, but thinner, for rice and the larger grains; No. 3, thick, coarse, and open, is principally suited for the outer covering of double bags. The manufacture of gunny with primitive looms is a common form of convict labor in Bengal. Near the Himalayas, in n.e. Bengal, the natives wear a fine cloth of their own manufacture, made of Jute or Jute and cotton.

Increased demand has lately induced Jute production in Burmah, Italy, Queensland, and the United States, etc.; and a European company has been started to cultivate Jute in British Burmah on a large scale. The manufacture is extensive in Great Britain, and is the chief industry of Dundee and Belfast. In Bengal, Jute valued at about $5,000,000 is annually manufactured, mostly for local consumption. It is made chiefly by the English mills, of which there are several near Calcutta, employing thousands of hands, the Gauripore and Barnagore mills being the principal. Additional mills on a large scale are being erected, so that it remains to be seen whether the advantages of locality and cheap labor in India, over enterprise, cheap machinery, and established trade at Dundee and Belfast, will cause the present supremacy of the latter places to wane.

In Bengal coarse paper has for centuries been made from Jute by beating the fibre into a pulp with lime, dry-

ing it in sheets, sizing with rice starch, and polishing with a stone or shell.

New Zealand flax (*Phormium tenax*) is a rival fibre. Rhea or China grass (*Urtica tenacissimus*), which grows wild in rank luxuriance in the tropics, is so fine and strong as to rival silk, but there is great difficulty in separating the fibre from the wood and bark. The E. Indian government offer £5,000 for a cheap invention for this purpose; till this is discovered, Bengal Jute is likely to maintain its supremacy among the cheap fibres of the world.

Jute of a fine glossy appearance brings the highest price in the market. It is spun by processes similar to those employed for flax, but as it is 10 to 15 ft. long, it must be cut into 3 ft. lengths before it can be heckled. The fibre requires also to be saturated with whale-oil and water to soften and render it more elastic, preparatory to spinning. Heckling is the first of the spinning operations, and its object is to remove the coarser portions of the Jute and lay the fibres in parallel order. The heckle is a kind of comb, with sharp-pointed steel teeth, one to two inches in length. Formerly, the process was by hand, now by heckling-machines. The heckled stricks are next taken to the *spreader*, or first drawing-frame, where they are spread upon an endless creeping-sheet, to supply the Jute continuously to another part of the machine, where, by a peculiar arrangement of rollers, it is drawn out, through combs of closely-ranged steel pins, into a continuous ribbon, called a *sliver*. A number—say, 14—of these slivers are then taken to another drawing-machine, with steel combs, and drawn out into one. In like manner, some 20 of these combined slivers are again drawn into one. The first sliver from the spreader has thus been drawn out about 280 times its original length; and by continuing this doubling and drawing, the fibres become thoroughly parallel and equalized. The sliver from the last drawing-frame is still further drawn out, and at the same time receives a slight twist in the roving-frame. Finally, the bobbins of 'rove' are taken to the spinning-frame, and spun into yarn on the 'throstle' principle.

As in the case of flax, the Jute tow from the heckling process is also spun into yarn, in which case it is first carded by means of a 'breaker' and 'finisher' card, and then *drawn, roved,* and *spun,* as above described. Indeed, much Jute, as imported, is treated in this way without being heckled at all.

The larger portion of Jute fabrics is woven from yarn of the natural color; but for some purposes it is bleached; and when used for carpets, it is dyed various colors. It bleaches with difficulty, but is easily dyed. Hessian sheetings for packing all kinds of merchandise are most largely produced; but sackings, baggings, osnaburgs, ducks, carpetings, mattings, etc., are largely made as well. It is also intermixed with flax, cotton, and wool for

various union fabrics. There has been difficulty in rendering the dyes on this material fast; but at Barrow-in-Furness, England, where it is manufactured on a considerable scale, a process for permanent dyeing of the fibre is in successful operation. As a result of this, a finer class of Jute goods, e.g., curtains, table-cloths, and dress-pieces are now made, to which the general name of *Kalameit* is given.

The large and increasing demand for Jute in the United States, where it has long been used as a covering for cotton bales and for other bagging purposes, has led to successful attempts to acclimatize the plant in portions of the s. states approximating the conditions under which it thrives in India. Jute was introduced into the United States by the Department of Agriculture in 1870 (see various articles in Monthly Reports of this department 1870-5), and was found to be adapted to cultivation along the line of Gulf States from Texas to South Carolina. It should be noted that the China Jute of commerce is not Jute at all, but a similar bast fibre derived from *Abutilon avicennæ*. This plant was experimented with in New Jersey 25 years ago, though unsuccessfully, the fibre being wrongly called American Jute. Little may be said regarding Jute culture in this country. Machinery would need to be used for stripping the fibre, and there are no practical machines; furthermore, at the low prices which prevail for the imported Jute, it is doubtful if it could be made a paying crop. The plant is adapted to cultivation in the United States and produces a superb fibre, but it would not be able to compete with India Jute at 1½ to 2½ cents per pound. See Special Report (No. 8), office of Fibre Investigations of the Department of Agriculture; *Dictionary of the Economic Products of India*, and various Bulletins of the Royal Gardens, Kew, England.

JUTE, n. *jôt:* a native of Jutland in Denmark; probably another form of *Goth. Jutland* was known in England as *Gotland.*

JUTLAND, *jŭt'land* (Dan. *Jylland*): only considerable peninsula of Europe that points directly n.; a portion of the kingdom of Denmark. It formerly comprised the province of N. Jutland and the duchy of Slesvig (q.v.), called by the Danes S. Jutland. The province of N. Jutland has 9,709 sq. m.; pop. abt. 1,062,000; see DENMARK. Jutland is said to have been inhabited in the earliest times by the Cimbri (q.v.), and from this circumstance it has received the name of the Cimbrian Peninsula, or Chersonesus. In historical times, we find it inhabited by the Jutes, who took part in the expedition of the Saxons to England. As allies of the Saxons, they waged war with Charlemagne, and under the names Normans (Northmen), frequently desolated the coast of Germany and France.

JUTTY, v. *jŭt'tĭ* [see JUT]: in *OE.*, to shoot out beyond anything: N. the part of a building which projects

beyond the rest; a pier or mole projecting into the sea—also called a JETTY. JUT'TYING, imp. JUTTIED, pp. *jŭt'tĭd.*

JUVENAL, *jô'vĕ-nal* (DECIMUS JUNIUS JUVENALIS, *jô-vē-nā'lĭs*): Roman satirist: was born at the Volscian town of Aquinum. The year of his birth is unknown; but it may be taken for granted that he was a youth in the reign of Nero; that he was come to man's estate, and was writing in the reign of Domitian (81-96); and that he lived through the reign of Hadrian (117-138). He seems to have possessed a competence. He practiced at Rome as an advocate; and there are some reasons for supposing that he visited Egypt. Among his friends were Martial and Statius, and perhaps Quintilian. But nothing is known of his personal history except a few leading facts —among them, that he recited some of his satires in public with much applause; and even these facts are not known to us in any detail. His interest for posterity depends altogether on his writings—on his 16 satires, still surviving, which are in the first rank in satirical literature, and of priceless value as pictures of the Roman life of the empire. Juvenal and Horace respectively represent the two schools into which satire has always been divided; from one or other of them every classical satirist of modern Europe derives descent. As Horace is the satirist of Ridicule, so Juvenal is the satirist of Indignation. Juvenal is not a man of the world so much as a reformer; in Roman literature he acts a part corresponding in strong denunciation of evil (though not in presentation of holiness or in any hopeful urgency toward repentance) to that of the prophets under the Jewish dispensation. He uses satire not as a branch of comedy, which it was to Horace, but as an engine for attacking the brutalities of tyranny, the corruptions of life and taste, the crimes, the follies, and the frenzies of a degenerate society. He has great humor of a scornful, austere, but singularly pungent kind, and many flashes of a high moral poetry. We would especially point out that the old *Roman* genius—as distinct from more cosmopolitan talent formed by Greek culture—is distinctly discernible in Juvenal. He is as national as the English Hogarth, who perhaps gives a better image of his sort of faculty than any single English humorist or moralist that we could name. Juvenal has been better translated in our literature than almost any other of the ancients. Dryden's versions of five of his satires are among the best things Dryden ever did. Dr. Johnson imitated two of the most famous in his *London* and *Vanity of Human Wishes;* and the version of the whole of them by Gifford (London, 1817) is full of power and character The best known modern edition of Juvenal is that of Ruperti, and there are good English ones by Mayor, Lewis, Pearson, and Strong, Hardy, and (in America) Wilson.

JUVENALIA, n. *jô-vĕn-ā'lĭ-a* [L.]: in *Rom. antiq.*, games for young persons, instituted by Nero.

JUVENESCENT, a. *jô-vĕ-nĕs'sĕnt* [L. *jŭvĕnes'cens* and *juvĕnescen'tem*, growing or becoming young again—from *juvĕnis*, young]: growing young. JU'VENES'CENCE, n. *-sĕns*, a growing young.

JUVENILE, a. *jô-vĕ-nĭl* [F. *juvénile*—from L. *jŭvĕnīlis*, youthful—from L. *jŭvĕnis*, young]: young; youthful; suited to youth: N. *familiarly*, a young boy or girl. JU'VENIL'ITY, n. *-nĭl'ĭ-tĭ*, youthfulness; the manners or customs of youth.—SYN. of 'juvenile': puerile; boyish; childish.

JU'VENILE OFFEND'ERS, SCHOOLS FOR: institutions for offenders of tender age, in which they may be separated from adult criminals, and subjected to different punishment and reformatory treatment.

John Howard's efforts to ameliorate the condition of English prisoners and improve the forms of prison construction and management, induced members of the Soc. of Friends in London to organize a movement for the reformation of juvenile delinquents 1817, which culminated in the erection of the first house of refuge for such children. In the following year Friends in New York, impressed with the necessity for similar efforts in the United States, and satisfied from correspondence with the Friends in London of the practicability of the new system, organized the Soc. for the Prevention of Pauperism. They worked under this name several years, the field constantly widening and presenting new features for serious consideration. It became apparent that the real reform should begin with children of natural or acquired vicious habits, before they were subjected to the hardening influences of penal confinement. The suggestions of Edward Livingston (q.v.) 1803, which he developed in his La. Code 1821, comprising a house of refuge, house of industry, and school of reform, seemed to promise the quickest and best results. Accordingly the soc. changed its name and was incorporated 1823 as 'The Soc. for the Reformation of Juvenile Delinquents.' This was the first American soc. organized for this purpose, and the structure on Madison Square, established 1824, was the first American house of refuge for children. The institution with its farm now occupies a large part of Randall's Island in the East river. From this beginning the system spread rapidly; similar institutions were opened in Boston, 1826; Philadelphia, 1828; New Orleans, 1847; Westborough, Mass., 1848; Cincinnati, R. I. ('Howard'), and Portland, Me., 1850; New York (Juvenile Asylum), and Boston (House of Reformation), 1851; Lowell, Mass., 1852; Meriden, Conn., and N. Cambridge, Mass., 1853; Morganza, Penn., Lancaster, Mass., and St. Louis, Mo., 1854; Lansing, Mich., 1855; Manchester, N. H., 1857; San Francisco, 1859; Waukesha, Wis., 1860; Wor-

cester, Mass., and Westchester, N. Y., 1863; Jamesburg, N. J., Vergennes, Vt., and Louisville, Ky., 1865; Baltimore, Md., Newport, Ky., and Palmer, Mass., 1866; Plainfield, Ind., Albany, N. Y., and St. Paul, Minn., 1868; Delaware, O., Washington, D. C., and Boston (Truant Home), 1869; Salem, Mass., 1870; Trenton, N. J. (for girls), 1871; Cheltenham, Md., 1872; Indianapolis, 1873; Lawrence, Mass., and Verona, N. J., 1874; Milwaukee, 1875; Elmira, N. Y., 1876; S. Evanston, Ill., and Boston (Marcella Street Home), 1877; Mitchellsville, Ia., and New Bedford, 1878; Adrian, Mich., 1879; Golden, Colo., N. Topeka, Kan., and Kearny, Neb., 1881; Detroit, Mich., 1882; Carroll P. O., Md., and Utica, N. Y., 1886; Canaan Four Corners, N. Y., 1887, etc. Recent statistics give over 80 institutions for juvenile offenders in the United States, employing nearly 600 instructors, with 22,700 pupils attending the schools, of whom 14,700 were in industrial departments. The total number of inmates was nearly 25,000. The number of assistants, not including instructors in school departments, was 1,790. On an average 11,650 offenders are committed to the institutions yearly, and 11,950 discharged. When discharged from the schools many of the pupils possess a trade and are provided with good homes; all can read and write, and the majority receive the equivalent of a common school education.

JUVIA, n. *jō'vĭ-a:* the Brazil nut, fruit of *Bertholettia excelsa,* a tree 100 to 120 ft. high, in S. America.

JUX'ON, William: English prelate, archbishop of Canterbury; b. Chichester, Sussex, 1582; d. London 1663, June 4. He was educated at Oxford, took orders and after holding church livings (in 1609 at Oxford, and then in 1614 at Somerton), in 1621 succeeded Laud as president of St. John's College. In 1627 he was appointed vice-chancellor of the university, and about the same time chaplain in ordinary to Charles I., who gave him the deanery of Worcester, and then the bishopric of London (1633). He attended the king on the scaffold. His fidelity cost him his bishopric, but at the Restoration he was made archbishop of Canterbury.

JUXTAPOSITION, n. *jŭks'tă-pō-zĭsh'ŭn* [L. *juxta,* near, and Eng. *position*]: a being placed near or by each other; contiguity.

# K

K, or k, *kā*, eleventh letter of the English alphabet, a consonant: it has one invariable sound, *c* hard as in *cat, cot, cut.* In some words (e.g. *lock*) *k* following *c* serves merely to make unmistakable the hard sound of *c.* The *k* formerly added when *c* terminated a word (e.g. *publick, musick*), is now discarded. The Shemitic languages had two characters with the same or very similar consonantal power—one called in Hebrew *Kaph* (hollow of the hand), the other *Koph* (the hind head). Both were at first transplanted into the Greek [κ (*Kappa*) = K, ϱ (old Greek *Koppa*)=Q], and thence into Latin; but in Greek, *Koppa,* or *q,* was early dropped, and in Latin *Kappa,* or *k,* was supplanted by *c* (see ALPHABET, and letter C), except in the case of a few words, as *Kalendæ* and *Kæso.* In the languages derived from Latin, accordingly, *k* is used only in writing foreign words. Although unknown to the Anglo-Saxon alphabet, it has in modern English to a considerable extent taken the place of *c* in words of Saxon origin: see C. The character *Koppa,* or *q,* has been retained in modern alphabets, as it was in Latin, only in the combination *qu.* This is clearly a relic of the primitive nature of written characters, when they constituted syllabaries rather than alphabets, each character expressing a consonantal articulation followed by a particular vowel sound; so that there was one character for *ba,* and another for *bo;* one for *ka,* and another for *ko* or *ku,* as in hieroglyphs. *K* (*q,* or *c* hard) is the sharp mute of the guttural series, *k, g, ch, gh:* see LETTERS. For the interchanges of *k,* see C.

KAABA, n. *kā'ă-bă* or *kā-â'bă* (see CAABA): oblong stone building within the great mosque of Mecca (q.v.). According to the legend, Adam worshipped on this spot first after his expulsion from Paradise, in a tent sent down from heaven for this purpose. Seth substituted for the tent a structure of clay and stone, which was, however, destroyed by the Deluge, but afterward rebuilt by Abraham and Ishmael. Certain it is that the building has stood from time immemorial, and served the Arabs before Mohammed as a place of idolatrous worship, probably to Zohal (Saturn). It is, as it now stands—rebuilt 1627—35 to 40 ft. high, 18 paces long, 14 broad. Its door, coated with silver, is opened only three times in the year —once for men, once for women, and once for the purpose of cleaning the interior. Next to this door, in the

n.e. corner of the edifice, is set the famous lava-like Black Stone which, since the second year of the Hegira (q.v.), has served as Kibleh, i.e., as an indicator of the direction toward which all Moslems must turn in their prayers. This stone, said to have dropped from Paradise together with Adam, is held in extreme veneration, and one of its principal names is 'The Right Hand of God on Earth.' It was originally of white color, but the sins of mankind have caused it to shed so many silent tears, that it has become (externally) quite black. Others explain this change of color by the unnumbered kisses and touches bestowed upon it by the pilgrims, part of whose ceremonies (see HAJJ) consists in compassing the Kaaba seven times, each time either kissing this stone, or touching it with the hand, and kissing the latter. A smaller stone, to which less veneration is shown, is set in the s.e. corner of the Kaaba. The outside of the Kaaba is annually covered anew with the richest black silks, on which are embroidered sentences from the Koran in gold; a pious contribution first on the part of the caliphs, later of the sultans of Egypt, now of the Turkish emperors. The Kaaba has a double roof, supported by pillars of aloe-wood, and it is said that no bird ever rests upon it. The whole edifice is surrounded by an inclosure of columns, outside which there are found three oratories, or places of devotion, for different sects; also the edifice containing the well Zem-Zem, the cupola of Abbas, and the Treasury. All these are further inclosed by a splendid colonnade, surmounted by cupolas, steeples, spires, crescents, all gilded and adorned with lamps, which nightly shed brilliant lustre. These surroundings, between which and the Kaaba run seven paved causeways, were devised first by Omar, for better preservation of the Kaaba itself.

KAAMA, or CAAMA, *kâ'ma* (*Antilope Caama*): species of antelope, native of s. Africa, nearly allied to the *Bubalus* (q.v.) of n. Africa. It is the *Harte-beest* of the Dutch colonists of the Cape of Good Hope, where it is the most common of all the large antelopes. Its horns are rather short and thick, curved like the sides of a lyre. It inhabits plains and congregates in large herds. Its flesh is very good, more resembling beef than that of almost any other antelope. It is very capable of domestication.

KAB'BALAH. See CABALA.

KABBELON, n. *kăb'ĕ-lŏn* [Ger. *kabbelian;* Sw. *kabelgo;* Dan. *kabeljao*]: cabbage and potatoes mashed together; a dish of mashed cod; in *naut.*, codfish which has been salted and hung for a few days, but not thoroughly dried.

KABUL'. See CABUL.

KABYLES, *kâ-bēls'* (correctly KABÁIL: another name for the BERBERS (q.v.).

KADESH BARNEA, *kā'dĕsh bâr'nē-a:* site of many important events in biblical history, whose exact location

has been the subject of much controversy. It is variously spoken of in the Bible as being on the Chedorlaomer route from the wilderness of Paran to the n.; as the e. boundary of Abraham's possessions; as a city on the s. boundary of the Negeb; as having the fountain the 'Well of Judgment;' as being 11 days' journey from Mt. Sinai, as a suitable abode for Israel, as the 3d station of the Israelites on their march from Sinai to Canaan; as the place where the people murmured and were turned back to wander nearly 38 years more in the desert, where Moses smote the rock for water, where for his offense he was sentenced to die without entering Canaan, and where the Israelites reassembled for their final march into the promised land. In 1838 Dr. Robinson located it at 'Ain-el-Weibeh, 10 m. n. of Mt. Hor, long. 35° 30′; 1842 the Rev. John Rowlands identified 'Ain Qadis with it, in an oasis 90 m. s. of Hebron; and 1881 Dr. Henry Clay Trumbull confirmed this identification. 'Ain Qadis is about 60 m. w. of 'Ain-el-Weibeh, long. 34° 30′.

KADIAK, *kâd-yăk′*, incorrectly written KODIAK: island s.e. of the peninsula of Alaska (q.v.), containing the oldest settlement in the territory as distinguished from the Aleutian archipelago. It is little better than an irregularly shaped mass of mountains, 75 m. by 50. The chief value of Kadiak consists in the tolerable harbor of St. Paul, on its n. coast.

KADIAKS, *kâd-yăks′*, or KONIA'GAS (Russ. KOLOSHES): aboriginal race in the n. part of Alaska, whose chief representatives are found in the island of Kadiak. There are several tribes. The race is widely scattered, but is small in numbers, and of low grade.

KADUR, or CADOOR, *kâ-dôr:* district in the native state of Mysore, India; bounded n. by Shimoga, e. by Chitaldrug, s. by Hassan, w. by the Bombay district of S. Kanara; lat. 13° 12′—13° 58′ n., long. 75° 8′—76° 25′ e.: 2,294 sq. m. It is almost wholly a hilly country, with the Ghauts mountain chain on the w. frontier with two peaks 6,215 and 5,451 ft. high, and the Baba Budans range in the centre with a peak 6,317 ft. high. The plain country in the e. is fertile, well watered, and provided with numerous irrigation channels. The principal natural wealth of Kadur is in its great forests of the finest timber; iron is mined at the foot of the hills; corundum is found in several localities; fish, wild beasts, and game abound. Chikmagalur is the headquarters of the dist., with pop. 2,100, but Tarikere is the largest town, p. 5,300. Pop. of dist. 332,400, of whom Hindus 318,500.

KAF. See CAF.

KAFA, or KAFFA, *kâf′fâ*, or GO'MARA: country of e. Africa; s. of Abyssinia, w. of Somauli, between the basins of the Gobat and Juba rivers; near lat. 7° n., long. 36° 30′ e.; 5,000 ft. above the sea. The country is governed by an absolute king, who is said to be able to

muster 10,000 horsemen at will; the people possess many of the characteristics of the Abyssinian, speak a language of the Hamitic group, profess a corrupt form of Christianity, and are naturally warlike. The chief productions are coffee (here indigenous), *ensete*, the principal food, resembling the banana, palms, and cotton. Kafa was first visited by Europeans 1843.—Chief town Bonga, lat. 7° 12′ 30″ n., long. 36° 4′ e., having pop. 6,000-7,000.

KAFFA, *kâf'fâ*, or FEODOSIA, *fā-ō-dō'sĕ-â:* fortified town and seaport of s. Russia, govt. of Taurida; picturesquely situated on the e. coast of the Crimea, 70 m. e. of Simferopol. The harbor, a portion of the bay of Kaffa, inlet of the Black Sea, is deep and safe. It contains a citadel, barracks, and a museum of antiquities collected chiefly in the vicinity; and though it has greatly declined, is still the seat of considerable trade. The principal exports are wheat, hides, sackcloth, and goats' hair. Kaffa, the ancient *Theodosia* or *Feodosia*, was in the 13th c., when it was under Genoese dominion, a centre of trade. In 1465, it fell into the hands of the Turks, under whom it had 100,000 inhabitants. In 1783, it was taken by the Russians, to whom it was ceded by the treaty of Jassy 1792.

KAFFER, or KAFIR, etc., n. [Ar. *kâfir*, infidel]: one of the race of Kafirs: ADJ. pertaining to the Kafirs (q.v.).

KAFFRARIA, BRITISH: region of s. Africa, between the Great Kei and the Keiskamma, wrested from the Kafirs by the Cape colonists in the war of 1846-7. It was for a time an independent colony, but is now a part of Cape Colony, and the old name is seldom used. See CAPE COLONY.

KAFFRARIA, *kâf-frâ're-â*, PROPER, or INDEPENDENT KAFFRARIA: region in s. Africa. The designation Kaffraria was formerly applied to the whole coast region of s. Africa e. of the Great Fish river. Then it was long limited to a strip between Cape Colony and Natal, bounded by the Great Kei and Umzimculu rivers. Since 1875 it is, however, false to speak of this as independent Kafirland, as Fingoland, the Idutwya Reserve, Tambookieland, and other districts beyond the Kei, are now annexed to Cape Colony. This annexed Transkei territory has a larger area than the really independent portion on the sea-board.

Kaffraria is drained by the Great Kei, the Umzimvoobo or St. John's river, and its fan-like branches, the Tsetse and Tena, which rise in the Quathlamba; the Umzimculu, Umtata, Umbashee, and several other streams, with short courses, which rise in a high escarpment or ridge, forming a sort of buttress to an undulating grassy but woodless plateau, along the foot of the mountains, about 2,500 ft. above sea-level. The rivers, especially near the coast, run through deep-wooded kloofs sunk below the level of

the surrounding country, and none of them are navigable. The coast generally is rocky and dangerous, and should not be approached closer than three m.: anchorage may be found in one or two shallow bays e. of the St. John's river.

Kaffraria is inhabited by the remains of the Amaxosa and Amamtembu tribes of Kafirs (who since the annexation of British Kaffraria, have retired across the Kei river), and by the once powerful tribes of the Amagaleka, Amampondos, and Amabaxa; besides the remains of many broken Zulu tribes, refugees from the wars of Chaka and Dingaan, who have found shelter in that portion of the country that borders on Natal. The total number of natives may be roughly estimated at 300,000; but it is probable in a very few years the whole region will be absorbed into the neighboring colonies of British Kaffraria and Natal, as the population is rapidly decreasing, and the chiefs fast losing their prestige and influence. The paramount chief is Rili, or Creili, of the Amagaleka tribe, who has his principal kraal about 20 m. e. of the Great Kei river.

The soil of Kaffraria is fertile. The natives raise sufficient crops of Indian and Kafir corn, pumpkins, etc., for their own use. Cotton has been successfully grown in many localities along the coast. Cattle, horses, and goats thrive, and a considerable trade with adjacent colonies is carried on in hides, horns, goat-skins, tallow, and wagon-wood. The Wesleyan Soc. have established many well organized stations, forming convenient halting-places along the lines of road which traverse Kaffraria between the Cape Colony and Natal, and where travellers meet a kind reception.

KAFFRE-BREAD. See CAFFER-BREAD.

KAFILA, or KAFILAH, n. *kăf'ĭ-la* [ARAB. *kafala*]: a caravan or company traveling with camels.

KAF'IR CORN. See DURRA.

KAFIRISTAN, *kâ-fē-rēs-tân'* [Ar. country of the Kafirs or infidels]: region of central Asia, on the s. declivity of the Hindu Kush, forming part of the n. basin of the Cabul, 35°-36° n. lat., and 69° 20′-71° 20′ e. long.; 7,000 sq. m. The country is divided into narrow valleys by spurs of the Hindu Kush. The inhabitants, estimated at abt. 200,000, differ, as the name of the country implies, in creed and origin from the great body of the neighboring tribes; in features and complexion, they claim kindred with Europeans. Their language, too, is said to be wholly independent of the other dialects of central Asia. This state of isolation is due mainly to the natural defenses of the region, which, though repeatedly invaded, has never yet been subdued. The soil is fertile enough to render external intercourse comparatively unnecessary, yielding fruits, wheat, and millet, and feeding large herds of cattle, sheep, and goats. Metals an

timber abound, which are wrought by the people with considerable skill.

KAFIRS, or KAFFIRS, or KAFFRES, or CAFFRES, *kâ'fėrz* or *kăf'ėrz:* great family of the human race inhabiting s. Africa; classed by Dr. Latham in division B of the variety Atlantidæ, their physical conformation being modified negro; and which includes also Betjuans (q.v.), Ovampos, Damaras, and other similar tribes living in the region s. of 18° s. latitude, and extending to the boundaries of the Cape Colony. By the term Kafirs, however, the tribes inhabiting the coast-country on the e. side of s.e. Africa are generally understood, and recent events have further narrowed the designation in a popular sense as applying specially to the tribes living in the country between the Cape Colony and Natal, those e. of the latter colony, as far n. as Delagoa, being now better known as Zulus or Zulu Kafirs. The general distribution of the Kafirs is as follows (prefix *Ama* signifies tribe or family): 1. Tribes (Amatabele, Amazulu, etc., n. of Natal; Amampondo, Amaxosa, etc., in Kaffraria Proper) speaking the Zulu language and its dialects, inhabiting the e. coast region; 2. Tribes (Makololo, n , and Bakuku, n.w. of Lake Ngami; Bakalihari, etc.), speaking the Sîchuana language and its dialects, inhabiting the central region and known under the general name of Betjuans; 3. Tribes (Ovampos and Damaras) speaking the Ovampo or Otjiherero and its dialects; inhabiting the west-coast region.

*History, etc.*—The word Kafirs [Ar. unbeliever] was applied by the Mohammedan inhabitants of the e. coast to the native tribes south of them; and was adopted by the Portuguese, after their settlements at Melinda and Mozambique, to designate the inhabitants of the vast region southward extending to the country of the Hottentots, now the Cape Colony.

The oldest genealogical records of the chiefs of the Kafirs go back to 1617. In 1688, the old Dutch colonial records first mention the Kafirs as having at that early period driven the Hottentot aborigines as far s. as the Great Fish river; and 1784, that river was declared the boundary of the Cape Colony to the east. In 1798, began the series of Kafir wars with the British, and till 1811 the Kafirs were repeatedly attacked and driven across the Fish river. In 1819, under the leadership of a false prophet called Makanna, they ventured to attack Graham's Town, but were repulsed with great slaughter. A period of broken peace and ill-kept treaties then succeeded, during which time a considerable European and Hottentot population had been settled along the frontier (1820). In 1828, they were driven out of the Kat river valley, which was filled with Hottentot settlers; then came the great war of 1834-5, which cost Britain more than a million sterling, and ended in the Kafirs being driven e. of the Great Kei; and the territory between it and the Great Fish river was taken possession of by

Sir B. Durban, but immediately restored by the then colonial sec. Lord Glenelg. In 1846 war, which had been long inevitable, again broke out, and the Gaika and Islambie Kafirs, members of the great Amaxosa tribe, invaded the colony, and overran the whole of the frontier districts as far w. as Uitenhage, and n. to the Stormbergen, inflicting great loss even on the imperial troops on many occasions. Again, under Sir H. Smith 1848, they were driven back, and the country that they inhabited once more annexed to the British crown, under the title British Kaffraria. Unfortunately, however, the influence of the chiefs remained unbroken, and they used it for evil by again invading the colony 1851, and this time not only the Gaika tribes, but the whole of the Amaxosa and Amamtembu, besides a numerous body of rebel Hottentots, all well armed and provided with ammunition. Again, after a struggle of many months, they were finally repulsed; and Sir George Grey, by his astute policy, succeeded in breaking the power of the chiefs, dispersing the tribes among the European settlers, and utterly destroying their strength, in which he was not a little assisted by a terrible famine which about that period fell on the unfortunate people, they having neglected to plant their fields, and having killed nearly all their cattle, at the command of a false prophet called Umlangeni, whose influence the deluded chiefs used to urge their people to this last war. In 1877 a new disturbance broke out among the Galeka Kafirs in the Transkei territory, extended to the Gaikas, and was followed by the war with the Zulus. There was sharp fighting between the Kafirs and the English and colonial forces; and the anxiety created by the war inflicted a serious check on the prosperity of the frontier settlements. A well-armed European population now occupies British Kaffraria, and the natives look for justice to local magistrates instead of to their former chiefs.

The Kafir races are a tall, well-made, and generally handsome people, of a dark brown or bronze color, and hair in short woolly tufts. To the northward, they gradually become more assimilated to the negro type, until at last the two races seem to blend. They are brave, and in times of peace, kind and hospitable to strangers, affectionate husbands and fathers; and their minds have a peculiarly acute and logical turn, which in many of the English 'palavers' with them gave them the best of the argument. They are an honest people, except, perhaps, as regards cattle. Although their idea of God appears very indistinct, and their feelings of veneration but small, yet they are very superstitious, and dread the influence of wizards and sorcerers. Their huts, built by the women, are of beehive shape, composed of wattles stretched with grass, and a collection of them is called a 'kraal,' a word of Portuguese origin signifying an inclosure. The general rule of the chiefs is patriarchal, they being assisted,

however, by a number of 'pakati,' or councilors, whose advice is generally followed by the chief. Polygamy is allowed, and wives are generally purchased for cattle. The chief has absolute power over the property of his whole tribe, though he seldom exercises it. If any individual accumulates great wealth, an accusation of witchcraft is sure to make him disgorge it. They in common with all other African nations, practice circumcision and many peculiar rites of purification, many of them analogous to those prescribed in the Mosaic law; but these rites seem, both in Africa and Asia, to have been generally practiced at an earlier period even than the Jews adopted them. The Kafir criminal code is very simple: a fine, great or small, of cattle pays for almost any offense, and the *lex talionis* is strictly forbidden even in case of murder. Many of their ceremonies and dances are very gross and obscene, though the Kafir women, especially after marriage, are chaste and modest in deportment, in striking contrast to the Hottentot race. The Kafirs are strictly a pastoral people, and the men tend their herds exclusively, even to milking them, leaving to the women the labor of cultivating their gardens, building their huts, gathering fuel, etc. They generally wear a blanket; the former robe of softened ox-hide is now very seldom seen. In war, the Kafir appears in the field naked and painted with a fiery red clay. The native arms are assagais and clubs, but the use of firearms is now prevalent among all the s. African tribes; and in the late war, the Kafir warriors, in skirmishing, excited the admiration of the light companies of some distinguished British regiments. The Kafir language is considered a dialect of the Sichuana, which is the original stock of the different tribes of the race. It is fine, sonorous and expressive, with a most ingenious and complicated system of grammar. On the Cape frontier, many Hottentot and Dutch words have been introduced; and in the Zulu dialect, the Wesleyan missionaries and Bp. Colenso of Natal have published many excellent works tending to elucidate the philology of s. African languages.

The Amafengu, or Fingoes, are the remains of various Zulu tribes, refugees from the wars of Chaka, reduced to slavery by the Amaxosa Kafirs, and rescued by Sir B. Durban 1835, and settled by him along the e. frontier of the Cape Colony. They are a saving, careful people, and many of them are converted to Christianity. They have always been firm allies of the British against their hereditary enemies the Kafirs, though of the same race and language. The Fingoes are often, from their money-making propensities, called the Jews of the Kafir race. The Amampondo, Amabaxa, and other tribes near the Natal frontier, have never been at war with the British, although often quarrelling among themselves: they are gradually declining in numbers, and are not near so fine a race as the frontier Kafirs.

The number of Kafirs has been estimated at three millions, scattered over about a million sq. m. Of these, there may be about 300,000 in Kaffraria Proper, 150,000 in British Kaffraria and Cape Colony, and 200,000 in Natal.

KAFTAN, *kăf'tan:* article of Turkish dress, like a dressing-gown, in use among other oriental nations.

KAGA, *kâ'ga:* one of the 7 provinces of the old *hokuri-kudo,* or northern-land circuit of Japan, known also as Kashiu; bounded n. by the province of Noto, e. by Etchiu, s. by Hida and Echizen, w. by the Japan Sea. It has several important cities and towns, one, Kanazawa, having 97,000. Kaga was the seat of the Maëda family of nobles prior to the revolution of 1868, and has long had world-wide fame for its manufactures of bronzes and the exquisitely decorated pottery known as Kaga-ware.

KAGOSHIMA, *kâ-gsō-shē'mâ,* or KAGOSIMA: town, capital of the province of Satsuma, on a bay at the s. end of the island of Kiushiu, Japan. It is also the capital of the prefectural ken of Satsuma, has an excellent harbor with a lighthouse, contains an armory and numerous manufactories, and has a large export trade. It was bombarded by the English 1863, Aug. 13, to compel Prince Satsuma to execute the murderers (led by the prince's brother) of H. L. Richardson, English merchant of Hong-Kong, and to pay $125,000 indemnity. Here in 1877 Saigo (q.v.) set up the standard of rebellion, and here also he was overwhelmingly defeated a few months later. Pop. 53,500.

KAHAL: a Hebrew term, denoting 'assembly' or 'community,' formerly applied to the local administration of the Jewish communities in Lithuania, Poland, and Russia. Before the crusades the Kahal was organized to some degree in western Europe. Its functions were partly administrative and partly religious, and all disputes were adjusted without recourse to the government, although at times the aid of the civil authorities was invoked. Its members were usually proportionate to the Jewish population, and its official council managed all communal matters, such as lawsuits, tax collections, weights and measures, landlord and tenant, the cleaning of streets, etc. The election occurred in the Passover week. The organization dates in Poland before the 16th century. It suffered in times of distress and financial troubles and often incurred the dislike of the people who wished direct control by the government, particularly when power was long retained in the hands of a few families. The system met occasional checks, but in 1835 it was re-established in the Pale of Settlement (q.v.), giving it extended power as of old. In 1844 the Kahal was abolished, its functions, with a few exceptions, being transferred to the city government.

KA'HAU, or PROBOS'CIS MONKEY. See NASALIS.

KAIANIANS, *kī-ā'nē-anz:* Persian dynasty founded by Kai Kobad, who was placed on the throne by Rustem after the overthrow of Afrasiab; reckoned the second in the historic series and the sixth in the combined legendary and historic. It existed B.C. 660-334, and closed with the overthrow of Darius by Alexander.

KAI-FUNG-FU. See HONAN.

KAIL, n. *kāl* [Gael. and Ir. *cal;* Manx, *kail;* W. *cawl,* kail, cabbage: AS. *cawl;* Dan. *kaal* (see COLE and KALE)]: in *Scot.,* the cabbage kind in general; greens; broth made of vegetables, etc. KAIL-BROSE, in *Scot.,* a dish made by pouring the liquid of broth while boiling over dry oatmeal, and giving the mixture a slight stir: see BROSE. KAIL-YARD, n. *kāl-yârd'* [Sw. *kaalgard,* a garden of herbs]: in *Scot.,* a kitchen-garden.

KAIM, or KAME, n. *kām* [AS. *camb;* Scot. *kaim,* a comb, crested: Gael. *cam,* crooked hill]: in *Scot.,* a name often given to certain elongated mounds of gravel, probably of glacial origin, occurring in the lower and broader valleys; eskirs or escars, which see; the crest of a hill; a low ridge.

KAIMACON, or CAIMACON, *kī'ma-kŏn* [Turkish]: title given in the Ottoman Empire to a deputy, or governor.

KAIN, *kān:* old term in Scotch Law, denoting rent paid in kind, as in the shape of poultry or animals, to a landlord.

KAIN, JOHN JOSEPH: an American clergyman; b. Martinsburg, W. Va., 1841, May 31; d. Baltimore, Md., 1903, Oct. 13. He studied theology and philosophy at St. Mary's Col., Md.; ordained in the Rom. Cath. Church, 1866, and was stationed at Harper's Ferry, Va.; consecrated bish. of Wheeling, 1875, May 23; became coadjutor archbishop of St. Louis, 1893; and archbishop, 1896.

KAINIT, n. *kī'nĭt* [Gr. *kainos,* recent]: in *agri.,* a kind of manure or top-dressing prepared from saline deposits rich in potassic salts, generally composed of potassic chloride, magnesic sulphate, and common salt.

KAIRWAN, *kīr-wân'* (properly KAIRAWÂN): decayed town of n. Africa, in the state of Tunis, 80 m. s. of the town of Tunis, in a treeless, marshy plain. It is surrounded by a brick wall surmounted by four towers. It contains about 50 ecclesiastical structures, of which the Okba Mosque is one of the most sacred of Islam. Okba was a companion of the prophet; and his shrine and other sacred tombs have rendered Kairwan the Mecca or sacred city of n. Africa. As such, it has been jealously guarded from defilement by the presence of Jews and for the most part of Christian travellers; but it was entered and explored by the French 1881. It is connected by rail with Tunis and with the port of Susa, 30 miles distant. It ranks next to Tunis in population and trade. Under the administration of the French many modern improvements

have been made, among which not the least important is a good water-supply. It has a variety of useful manufactures, including morocco, carpets, copper utensils, saltpeter, etc. Kairwan was the first seat of Saracenic empire in Barbary, and still has many fine relics of its ancient grandeur in the fragments of beautiful architecture which abound there. Pop., about 27,000.

KAISARIYEH. See CÆSAREA.

KAISER, n. *kī'zėr* or *kā'zėr:* German title for Emperor, and, like *Czar,* or *Tsar,* derived from Cæsar. Having been applied in the time of Diocletian to the ruler of Dalmatia and the region along the Danube, who was heir presumptive to the imperial crown, it was used by the mediæval emperors of Germany; and in later days by the emperor of Austria. William I. of Prussia assumed it when he became German emperor 1871.

KAI'SERSWERTH. See FLIEDNER, THEODOR.

KAJAK, or KAYAK, n. *kā'yăk,* or KYAK, n. *kī'ăk:* the boat of the Esquimaux, made of seal-skins stretched around a wooden frame, and closed at the top with the exception of a hole in the middle, where the boatman sits and propels it with a paddle.

KAKAPO, *kăk'ā-pō,* or OWL PARROT (*Strigops habroptilus*): remarkable bird, native of New Zealand, belonging to the Parrot family (*Psittacidæ*), but of very owl-like appearance, and, like the owls, nocturnal, or nearly so, concealing itself in holes during the day, except in very gloomy weather. The Kakapo takes possession of a hole which it may find among stones or the roots of trees, but seems also to have the power of making a burrow for itself. Dogs take it in its hole, although it makes some resistance. It is also pursued and taken by dogs when running on the ground. The flesh of the Kakapo is more pleasant and delicate than that of any other parrot. This interesting bird has almost disappeared from the northern island of New Zealand, and is much more rare in the middle island than it was a few years ago. It will probably soon be extinct, unless means are adopted for its protection. It is the only known bird having large wings which does not use them for flight.

KAKODYL, n. *kăk'ō-dĭl* [Gr. *kakos,* bad; *ŏdmē,* smell]: one of the compounds which arsenic forms with the radical methyl, forming a heavy fuming poisonous liquid which takes fire when exposed to the air: see CACODYLE.

KALA, n. *kâ'la* [Skr.]: in *Hindoo mythology,* Siva in one of his manifestations; sometimes used also for one of the names of Yama, regent of the dead; hence sometimes death itself.

KALA-AZAR: a disease, also called black fever or Assam fever, prevailing in Assam, and progressing through the country from one region to another at a rate of about fifteen miles a year. It is a chronic fever of

remittent form, recurring in repeated attacks, with intervals of entire freedom from fever. After a while the fever-free intervals cease and the disease becomes continuous. It is extremely fatal, nearly every one attacked dying in from one month to a year. The nature of the disease is unknown, though it is believed to be related to malaria or to Mediterranean fever.

KALAFAT, *kâ-lâ-fât'*: town in Little Wallachia, Roumania, on the left bank of the Danube river, directly opposite Widin; 155 m. from Bucharest. It occupies a naturally strong position, has been surrounded by a thick wall and provided with modern redoubts and fortifications, and, as it commands the approach to the Danube, is a place of great strategic importance. With Widin it has been the scene of many fierce battles between the Turks and their various Europeon foes. In the Russo-Turkish war, 1829, the Russians lost heavily in an engagement here; 1854 several fights occurred in Jan., and the Turks repulsed a Russian assault Apr. 19; 1877, Apr., Kalafat was occupied by Russian Cossacks, in May by Roumanian troops co-operating with the Russians, and was shelled by the Turks in Widin the latter month; and 1878, Jan., the Roumanians in Kalafat were shelling and investing Widin when Turkey began overtures for peace. Pop. abt. 5,300.

KALAKAUA, *kâ-la-kow'a* (David), king of the Hawaiians: 1836, Nov. 16—1891, Jan. 20 (reigned 1874-91); b. Honolulu. He was descended from an ancient native king; was educated in the royal school at Honolulu; was defeated as candidate for the throne on the death of King Kamehameha by William Lunalilo 1872; and on the death of King Lunalilo was elected king by the legislature by a vote of 33 to six for ex-Queen Emma, 1874, Feb. 12. He made a tour of the United States and Europe 1874-5 and 1881; crowned himself amid ceremonies of pomp in Honolulu 1883, Feb. 12; and was forced by a bloodless revolution, led by men having large mercantile interests on the islands, to dismiss an alleged corrupt ministry and to sign a new constitution which greatly limited the prerogatives of the crown, 1887, Jan. 10.

KALAMAZOO, *kăl-a-ma-zô:* city, cap. of Kalamazoo co., Mich.; on Kalamazoo river, and on the Michigan C., the Lake Shore & M. S., the Kalamazoo & S. H., the Grand Rapids & I., and the Chicago, K. & S. railways; 143 miles west of Detroit, 60 miles southwest of Lansing, and 45 miles south of Grand Rapids. Kalamazoo was settled by the Titus brothers in 1829, organized as a village in 1831, and until 1836 was known as Bronson, from the name of one of its early residents. It received a city charter in 1884. Kalamazoo is the commercial and distributing centre for a large farming region, is the most important celery market in the world, has over 250 mercantile houses, and manufactories representing 70 distinct

industries. Chief of the products are paper, furniture and other woodwork, farming implements, machinery, clothing, carriages, wagons, patent medicines, playing cards, caskets, windmills, foundry products, and flour. Kalamazoo is beautifully laid out and built; has excellent water power for its industries, Holley system of waterworks, gas and electric lighting plants, electric street railroads, and well equipped municipal departments. The assessed property valuation is about $10,000,000. Among notable institutions are Kalamazoo College (Bapt.) organized 1855, Mich. Female Seminary (Presby.) organized 1866, Nazárette Academy (R.C.), fine public schools, one normal school, Borgess and Queen City hospitals, Saint Anthony's School for feeble-minded children, Michigan Asylum for Insane, Academy of Music, and the public library. Other prominent buildings are the Y.M.C.A., the City Hall, several fine churches, and the high school. The government is vested in a mayor, public commissioners, and a council of nine members, elected annually. The school board is chosen by popular election. Pop. (1910) 39,437.

KALAMAZOO′ (or KEKALAMAZOO′) RIVER: rises in Hillsdale co., Mich., flows w.n.w. to Kalamazoo, thence n.w. to Lake Mich., at a point 29 m. s. of Grand river, 41 m. n. of St. Joseph river; length 200 m.; air-line from source to mouth 98 m.; width of mouth 300-400 ft.; navigable at all seasons by 50-ton vessels for 40 m. from its mouth. It drains the rich alluvial country in Hillsdale, Kalamazoo, Calhoun, and Allegan counties, flows through valuable pine and oak forests, affords excellent manufacturing sites, has on its banks the cities of Kalamazoo, Marshall, Battle Creek, and Allegan, and offers to archeologists a number of interesting remains of the mound-builders.

KALE, *kāl* or BORECOLE, *bōr′kōl* [Ger. *Kohl*, Scot. KAIL, q.v.]: cultivated variety of *Brassica oleracea*, differing from CABBAGE in the open heads of leaves, which are used for culinary purposes as *greens*, and also as food for cattle. There are many sub-varieties, of which some are of green, others of reddish-brown or purplish color; some have the leaves comparatively plain, others have them much waved or curled, also some fringed or laciniated. Most of the kinds are biennial, like the cabbage; but some may be reckoned perennial, as the *Milan Kale* (*Chou de Milan*), and are frequently propagated by cuttings. The kind called *German Greens* is one of the most delicate, and is much cultivated in Britain, chiefly as a winter vegetable. The more the leaves are curled, the more it is esteemed. The mode of its cultivation nearly agrees with that of cabbage (q.v.).

KALE, SEA. See SEA KALE.

KALEIDOPHONE, n. *ka-lī′do-fōn* [Gr. *kalos*, beautiful; *eidos*, form; *phōnē*, sound]: instrument invented by

Prof. Wheatstone, to illustrate the phenomena of waves of sound.

KALEIDOSCOPE, n. *kă-lī′dŏ-skōp* [Gr. *kălŏs,* beautiful; *eidos,* an appearance; *skopĕō,* I view]: optical instrument which presents to the eye an endless series of beautiful images or patterns of its inclosed objects by a simple change of its position. It was invented by Sir David Brewster 1817. It consists of a tube, through whose whole length pass two mirrors or reflecting planes, hinged together along one edge, and making with each other an agle which is an aliquot part of 180°, while one end of the tube is fitted with an eyeglass, and the other is closed by two glasses, at a small distance from each other, between which are placed little fragments of glass or other variously colored objects. The eye looking into the tube now perceives these objects multiplied as many times as the angle which the reflecting planes make with each other is contained in the whole circumference of a circle, and always symmetrically disposed; and the slightest shaking of the instrument produces new figures. There are various modifications of the kaleidoscope, by some of which its power is much increased; and it is not only a pleasing toy, but of great use to pattern-drawers and others, to whom it supplies endless varieties of figures.

KALENDAR, KALENDS. See CALENDAR.

KALEVALA, *kâ-lā-vâ′la:* national epic of Finland. The first attempt to collect the songs that compose it was by Dr. Zacharias Topelius, who published some fragments 1822. In 1835 Dr. Elias Lönnrot, who had travelled and lived among the peasantry for many years, brought out a systematically arranged collection of 32 runes or cantos and 12,000 lines; and 1849 he published a new edition of 50 runes and 22,793 lines. From these editions Castren translated the work into Swedish 1844, and Collin 1865, Leonzon le Duc into French 1845, and Schiefner into German 1852. In 1868 the late Prof. John A. Porter of Yale Univ. translated a small portion—the legend of *Aino*—into English; but there was no complete English translation till 1888, when John Martin Crawford, M.D., of Cincinnati, brought out a 2-vol. edition. See FINNISH LANGUAGE AND LITERATURE.

KALGAN, *kâl-gân′,* or CHANG-KEA-KOW: noted commercial city in the province of Chih-li, China; on the Yangho river, in the line of the great wall between Peking and Kiakhta, 137 m. n.w. of the former; lat. 40° 50′ n., long. 114° 54′ e., elevation above sea-level 2,810 ft. It extends 3 m. along the Yangho, consists of a walled town or fortress and suburbs, is in a beautiful and fertile valley with populous villages near by, manufactures large quantities of soda, and is on the main road of the overland route between China and Russia. Pop. estimated over 70,000.

KALGUEF, *kâl-gô-ĕf′,* or KOLGUEV, *kŏl-gô-ĕv′:* island

of Russia, in the Arctic Ocean, 240 m. in circumference, belonging to the govt of Archangel. It is 115 m. e. of the n. extremity of the peninsula of Kanin. It is the resort of innumerable flocks of wild-fowl, especially eider-ducks, geese, and swans.

KALI, n. *kā'lī* [see ALKALI]: a general name for those plants the ashes of which are used in making glass; the principal plants which produce soda are various species of *Salicor'nĭa, Sălsōla, Halĭmocnēmis,* and *Kochĭa;* caustic potash of the Ger. chemists. KA'LIUM, n. *-lĭ-ŭm,* among the Ger. chemists, the metallic base of kali—equivalent to our potassium. KA'LIFORM, a. *-fawrm* [L. *forma,* shape]: formed like the plant kali; or glass-wort.

KÂLI: Indian goddess. See UMA.

KALIDÂSA, *kâ-lē-dâ'sâ:* greatest dramatist, and one of the most celebrated poets of India. He is known to the literary public of Europe especially through his drama *S'âkuntala,* which, first introduced to the western world by Sir William Jones (1789), created so great a sensation throughout Europe, that the early success obtained by Sanskrit studies in England and Germany may be considered due to this masterpiece of Sanskrit literature. Another drama of the same poet, and next in renown to *S'âkuntala,* is the *Vikramorvas'î,* or the Hero and the Nymph. Besides these works, Hindu tradition ascribes to his authorship a third drama and several poems, which European critics will not believe could ever have sprung from a mind like that of Kâlidâsa. Prof. Lassen, in the *Indische Alterthumskunde,* passes the following judgment on this poet: 'Kâlidâsa may be considered as the brightest star in the firmament of Hindu artificial poetry. He deserves this praise on account of the mastery with which he wields the language, and on account of the consummate tact with which he imparts to it a more simple or more artificial form, according to the requirements of the subject treated by him, without falling into the artificial diction of later poets, or overstepping the limits of good taste; on account of the variety of his creations, his ingenious conceptions, and his happy choice of subjects, and not less on account of the complete manner in which he attains his poetical ends, the beauty of his narrative, the delicacy of his sentiment, and the fertility of his imagination.' But though we are enabled to appreciate the merits of this poet, we know little of his personal history. That he lived at Ujjayinî or Oujein, and that he was 'one of the nine gems of the court of Vikramâditya,' is all that is related in regard to him. But as there have been several Vikramâdityas at Ujjayinî, his date is as uncertain as that of any personage of the ancient history of India. The native tradition which assigns his life to the 1st c., is without evidence. Dr. Bhâo Dâjî, in a learned and ingenious essay 'On the Sanskrit Poet, Kâlidâsa (*Jour. of the Bombay Branch of the Royal As. Soc.,*

1860, Oct.), has endeavored to identify Vikramâditya, the contemporary of Kâlidâsa, with Harsha Vikramâditya, which would assign Kâlidâsa to the middle of the 6th c. Certain dialectic peculiarities have led some of the best critics to give Kâlidâsa the date approximately of the 3d century.

KALIF. See CALIPH.

KALIHARI DESERT, *kâ-lē-hâ'rē*. The Kalihari is a vast central and nearly uninhabited tract of country lying between Great Namaqualand and the Betjouana country, in south Africa, extending from the northern banks of the Gariep or Orange river to the lat. of 21° s., or the verge of the Ngami region, a distance of nearly 600 m., with an average breadth of about 350 m., and presenting some curious physical features quite distinct from other desert regions of the globe. It is wholly riverless, sandy, but in many places well-wooded region, on which rain seldom falls, intersected by dry watercourses, with a substratum of a tufaceous limestone, and to all appearance formerly the bed of an immense lake. Livingstone considers it remarkable for little water and considerable vegetation, and therefore very different from the karroos of the Cape Colony, which have neither water nor vegetation except after heavy rains, and from the bare and sandy deserts of north Africa and Arabia. No mountains or elevations of any considerable height are found in the Kalihari, the general level of which may be considered as 3,000 ft. above the sea. The few springs or 'sucking-places' which here and there are found are generally carefully concealed by the Bakillhari, a miserable wandering race of Betjouana Bushmen, who roam through the desert in quest of game. The Kalihari has been explored by Andersson and others; see his travels and those of Baines and Livingstone. After heavy rains, immense herds of elephants, rhinoceroses, and giraffes are found in its dense thickets, and feed on the succulent wild melons called 'Kengwe,' which then abound there. In the north part are immense forests of thorn-trees; coal and copper are abundant, and gold has been discovered in two mountain-ranges.

KALINITE, n. *kâ'lĭn-īt* [Ger. *kali*, potash]: same as alum, but occurring native in many places, and as a sublimation product in the craters and solfataras of volcanoes.

KALISPELS, *kăl'ĭs-pĕls*, or PENDS D'OREILLES, *pĕnds do-rēl'*, F. *pŏng do-rāy'*: tribe of American Indians of the Selish group, occupying reservations in Wash., Mont., Ida., and Brit. Columbia. Since Father De Smet (q.v.) founded missions among them 1844, they have been peaceable, industrious, and anxious for the benefits of civilization. In Mont., they were removed from a reservation in the Bitter Root valley to the Jocko reservation 1872; in Ida., they followed farming in the terr., and across the

line in Brit. Columbia, and in Wash., they were removed from the Kalispel valley to a new reservation n. and w. of the Columbia river 1872. There are 152 in Wash., 51 in Mont., besides those confederated with other tribes.

KALIYUGA, *kâ-lē-yô'gâ*, in Hindu Chronology: fourth and last of the periods contained in a Mahâyuga or great Yuga (q.v.). It may be compared to the Iron Age of classical mythology. It consists, according to native imagination, of 432,000 solar-sidereal years, and begins 3,101 years before the Christian era. The relation of the four Yugas being marked by a successive physical and moral decrement of created beings, the Kaliyuga is the worst of all. 'In the Kr'ita (or first) age,' Manu says, 'the (genius of) Truth and Right (in the form of a bull) stands firm on his four feet, nor does any advantage accrue to men from iniquity. But in the following ages, by reason of unjust gains, he is deprived successively of one foot; and even just emoluments, through the prevalence of theft, falsehood, and fraud, are gradually diminished by one foot (i.e., by a fourth part).' The estimate in which this kaliyuga, our present age, is held by the modern Hindus may be gathered from one of their most celebrated Purânas, the Padma-Purân'a. In the last chapter of the Kr'iyâyogasâra of this Purâna, the following account is given of it: 'In the kaliyuga (the genius of) Right will have but one foot; every one will delight in evil. The four castes will be devoted to wickedness, and deprived of the nourishment which is fit for them. The Brahmans will neglect the Vedas, hanker after presents, be lustful and cruel. They will despise the Scriptures, gamble, steal, and desire intercourse with widows. . . . . For the sake of a livelihood, some Brahmans will become arrant rogues. . . . . The Sûdras will endeavor to lead the life of the Brahmans; and, out of friendship, people will bear false witness . . . . they will injure the wives of others, and their speech will be that of falsehood. Greedy of the wealth of others, they will entertain a guest according to the behest of the Scriptures, but afterward kill him out of covetousness; they are indeed worthy of hell.'

KALK, n. *kălk* [L. *calc,* lime]: German for lime.

KALKI, n. *kăl'kĭ* [Skr.]: in *Hind. myth.,* the 10th avatar (incarnation) of Vishnoo or Vishnu (q.v.).

KALLIFTHORGAN, n. *kăl-ĭf-thawr'gan* [etym. doubtful]: musical instrument played as a piano, and imitating the effect of a violin, a violoncello, and double-bass.

KALMAR, *kâl'mâr:* town and seaport on the s.e. coast of Sweden, cap. of the lan of Kalmar; on the Kalmar Sound, opposite the island of Oland, about 200 m. s.s.w. of Stockholm. It has a good harbor, a handsome cathedral, and a large and beautiful castle, in which, 1397, July 12, the treaty called the 'Union of Kalmar,' which settled the succession to the three northern kingdoms

upon Queen Margaret of Denmark and her heirs forever, was agreed to by the deputies of the three kingdoms. The union, nevertheless, lasted only till the death of Margaret (see DENMARK, HISTORY OF). The commerce of the town is considerable, and there are manufactures of sugar and tobacco. Pop. 12,800.

KALMIA, *kăl'mĭ-a:* genus of plants of nat. ord. *Ericeæ,* consisting of evergreen shrubs, mostly about two or three ft. high, natives of N. America, with red, pink, or white flowers, generally in corymbs. The flowers are very delicate and beautiful, and the corolla is in the shape of a wide and shallow bell. The plants thrive in a peat-soil. *K. latifolia,* MOUNTAIN LAUREL, or CALICO BUSH of N. America, occupies large tracts on the Alleghany Mountains. It grows to the height of ten ft., and the wood is very hard. It is narcotic and dangerous; the leaves are poisonous to many animals, and honey from the flowers has noxious properties. A decoction of the leaves has been used with advantage in cutaneous diseases.

KALMUCK, n. *kăl'mŭck* [from the people called *Kalmucks* or *Calmucks*]: coarse, shaggy cloth, resembling a bear skin; coarse, colored cotton cloth made in Persia.

KALMUCKS, or CALMUCS, *kăl'mŭks,* or, as they call themselves, *Derben-Ueirat* (the Four Relatives), designated also as *Eleutes* and *Khalimik* (Apostates): most numerous and celebrated of the Mongol nations. They are divided into four tribes, the first of which, the *Khoskôts* (Warriors), number nearly 60,000 families, and inhabit the country around the Koko-nur, which they consider the native country of the race. One portion of this tribe migrated to the banks of the Irtisch, and became subsequently incorporated with the second tribe, the Dzûngars; another portion migrated to the banks of the Volga, in the 17th c., and is found at the present day in the govt. of Astrakhan. The second tribe are the *Dzûngars,* who give the name to a large territory (Dzûngaria) in the w. of Chinese Tartary; they number about 20,000 families. The third tribe are the *Derbets* or *Tchoros,* who deserted Dzûngaria and, finally, to the number of 15,000 families, removed a few years ago to the plains of the Ili and the Don, where they are being rapidly incorporated with the Don Cossacks. The fourth great tribe of the Kalmucks are the *Torgots,* who, about 1660, separated from the Dzûngars, and settled in the plains of the Volga, whence they were called the *Kalmucks of the Volga;* but, finding the Russian rule too severe, the majority returned to Dzûngaria (q.v.).

No other Mongol or Turkish race presents such characteristic traits as the Kalmucks; indeed, they answer exactly to the description given of them by Jornandes 13 centuries ago, when, under the name of Huns, they devastated s. Europe. The Kalmuck is short in stature, with broad shoulders and a large head; has small black eyes,

always appearing half-shut, and slanting downward toward the nose, which is flat, with wide nostrils; the hair is black, coarse, and straight, and the complexion deeply swarthy. The Kalmuck is considered the original type of the Mongol and Manchû races, and his ugliness is the index of the purity of his descent. They are a nomad, predatory, and warlike race, and pass the greater part of their lives in the saddle. Their usual food is barley-flour soaked with water, and their drink is the 'koumiss' made from fermented mare's milk. In 1829, Russia established a Kalmuck institute for the training of interpreters and govt. officials for the Kalmucks of Russia, and she has since been making great efforts to introduce civilization among them. Most of the Kalmucks are Buddhists; but a few have adopted Mohammedanism, or Christianity.

KAL'NA. See CULNA.

KALONG, *kā'lŏng* [Javanese name]: originally one or more species of frugivorous Bat (q.v.) inhabiting Java; but now frequently applied to all the frugivorous bats, the bats, the family *Pteropidæ;* or at least to all species of genus *Pteropus.* The *Pteropidæ* are large bats, and some are the largest of *Cheiroptera.* They are called *Roussette* by French naturalists, and often, popularly, FLYING FOX by Europeans in the East. They are found in the E. Indies, Japan, Australia, Africa, and S. America. There are many species. Their food consists chiefly of soft fruit, as bananas, figs, etc. The Javanese kalong (*Pteropus Javanicus*) measures about 5½ ft. in expanse of wing. The head and body are more than 12 inches long. It is gregarious, and during the day, great numbers may be seen hanging by their hinder claws, motionless and silent, on the branches of trees which they have selected for their abode. The body is covered with reddish-brown fur. This and the other true *Pteropi* have no tail, and a smaller numer of vertebræ—24 in all—than any other mammalia. Some of the *Pteropidæ* have a very short tail. The flesh of some is eaten, and one inhabiting the Moluccas and Isles of Sunda, called the Eatable Kalong (*P. edulis*), is said to be white and delicate. Some species are migratory.

KALPA, *kăl'pa,* in Hindu Chronology: a day and night of Brahmâ, which, according to some, is a period of 4,320,000,000 solar-sidereal years, or years of mortals, measuring the duration of the world; and as many years, the interval of its annihilation. The Bhavishya-Purân'a admits of an infinity of kalpas; other Purânas enumerate 30. A great kalpa comprises not a day, but a life of Brahmâ.—In Vedic literature kalpa is a Vedânga. See KALPA-SUTRA.

KALPA-SŪTRA, *kăl'pa-sū'tra:* in Vedic literature, those Sanskrit works which treat of the ceremonial referring to the performance of a *Vedic sacrifice.*—See VEDA. —In Jaina literature it is the name of the most sacred

religious work of the Jainas. (See JAINAS.) It is occupied chiefly with the legendary history of Mahavîra, the last of their 24 deified saints, or Tîrthankaras, but contains also an account of other four saints of the same class. The name of the author was Bhadra Bâhu, and the work was composed, as Stevenson assumes, A.D. 411; but the conjecture of another writer places it 632. It is held in so high respect with the Jainas, that, 'of the eight days in the middle of the rains which are devoted to the reading of those works esteemed peculiarly sacred, no less than five are allotted to the Kalpa-Sûtra.' Stevenson, *The Kalpa Sûtra and Nava Tatva* (Lond. 1848).

KALSOMINE, *kăl'so-mĭn,* or CALCIMINE, *kăl'sĭ-mĭn:* mixture of zinc-white and ground glue with water, used to cover side walls and ceilings instead of whitewash of clear lime. It may be tinted to any desired shade with coloring material, and when properly compounded and applied will not rub off as easily as ordinary whitewash. It is laid on with a soft brush, generally narrower and with longer bristles than a whitewash-brush, but the glue in it makes it difficult for an inexperienced person to apply it.

KALUGA, *kâ-lô'gâ:* a government in Russia, immediately s.e. of that of Smolensk; 11,942 sq. m. The surface is flat; the soil, stony, sandy, and only moderately fertile. More than half of the province is under forest. It is watered by numerous rivers, the chief of which is the Oka. The principal occupation of the inhabitants is the cultivation of hemp. Sail-cloth, largely exported to Europe and America, is the chief manufacture. Colored cloths for the China trade are made. The govt. of Kaluga is divided into eleven districts. Pop. 1,185,700.

KALU'GA: chief town of the govt. of Kaluga, Russia; on the right bank of the Oka, lat 54° 31′ n., long. 36° 20′ e. From the 14th to the 18th c., its stronghold was a great protection against the invasions of the Lithuanians, the Tartars of the Great Horde, and especially against the Crimean Tartars. In the centre of the empire and on a navigable river, it has an extensive corn trade, the corn being sent down the Oka to Nijni-Novgorod, thence up the Volga, the Volga canals, and the Neva, to St. Petersburg and the Baltic ports. The value of this branch of trade is 22,000,000 rubles (abt. $17,500,000). There are several leather and other factories. Kaluga has for many years been a place of banishment for political offenders. It was the residence of Schamyl, the Circassian chief. Pop. 49,700.

KAM. See KIM-KAM.

KAMA, *kâ'mâ:* navigable river of European Russia, principal affluent of the Volga. It rises in the govt. of Viatka, and after a s.w. course of 1,100 m. joins the Volga in the govt. of Kasan, 50 m. above the town of Kasan. Its chief tributaries are the Viatka, the Tchoussovaia, and

the Bielaia. This river is navigable 40 m. below its source, and the navigation commences in the beginning of May. The annual value of the goods conveyed on the Kama is estimated at $40,000,000. The river abounds in fish, especially salmon.

KÂMA, *kâ'ma,* or KÂMADEVA, *kâ-ma-dē'vâ:* Hindu god of Love. In Sanskrit poetry, especially of a later period, he is the favorite theme of descriptions and allusions; and mythology exalts his power so much that it allows even the god Brahmâ to succumb to it. According to some Purânas, he was originally a son of Brahmâ; according to others, a son of *Dharma* (the genius of Virtue), by *S'raddhá* (the genius of Faith), herself a daughter of *Daksha,* one of the mind-born sons of Brahmâ. The god S'iva being on one occasion greatly incensed at Kâma, reduced him to ashes; but ultimately, moved by the affliction of Rati (Voluptuousness), the wife of Kâma, he promised her that her husband should be reborn as a son of *Kr'ishna.* The god Kr'ishna, accordingly having married Rukminî, she bore him *Pradyumna,* who was the god of Love. But when the infant was six days old, it was stolen from the lying-in-chamber by the terrible demon S'ambara; for the latter foreknew that Pradyumna, if he lived, would be his destroyer. The boy was thrown into the ocean, and swallowed by a large fish. Yet he did not die; for that fish was caught by fishermen, and delivered to *Mâyâvatî,* mistress of S'ambara's household; and when it was cut open, the child was taken from it. While Mâyâvatî wondered who this could be, the divine sage, Nârada, satisfied her curiosity, and counselled her to rear tenderly this offspring of Kr'ishna. She acted as he advised her, and when Pradyumna grew up, and learned his own history, he slew the demon S'ambara. Mâyâvatî, however, was later apprised by Kr'ishna that she was not the wife of S'ambara, as she had fancied herself to be, but that of Pradyumna—in fact, another form of Rati, who was the wife of Kâma in his prior existence.—Kâma is described or represented as holding in his hands a bow made of sugar-cane, and strung with bees, besides five arrows, each tipped with the blossom of a flower which is supposed to conquer one of the senses. His standard is, agreeably to the legend above mentioned, a fabulous fish, called Makara; and he rides on a parrot or sparrow—symbol of voluptuousness. His epithets are numerous, but easily accounted for from the incidents above noted, and from the effects of love on the mind and senses. His wife is *Rati,* called also *Kâmakalâ,* 'a portion of Kâma,' or *Prîti,* 'affection'; his daughter is *Trishâ,* 'thirst or desire'; and his son is *Aniruddha,* 'the unrestrained.'

KAMALA, *kăm'a-la,* or KAMEELA, *ka-mē'la:* reddish-brown powder prepared from the capsules of the *rottlera tinctoria,* a small euphorbiaceous plant that grows wild in India, China, some parts of Africa, and Australia, and

used medicinally as a cathartic, for killing tape-worms, and for various skin diseases, and commercially as a dye-stuff, producing the peculiar deep red color common to E. Indian fabrics.

KAMBALIA, *kâm-bâ'lĭ-a,* or SERAIA, *sĕr-ī'ya* (sometimes SERRYAH): seaport of Kattywar, w. India, on the Gulf of Cutch; one of the safest harbors on that coast.

KAMBA'LUC (*Khanbalik*). See PEKING.

KAMEHAMEHA, *kâ-mĕh-hâ-mĕh-hâ* (I.—V.), Kings of the Hawaiian Islands. See SANDWICH ISLANDS.

KA'MENZ. See CAMENZ.

KAMES, Lord. See HOME, HENRY.

KAMI, *kâ'mē:* in Japanese, *God;* in Japanese literature, the celestial gods of the first mythical dynasty, the demigods of the second dynasty, spiritual princes, and any one beatified. Shintoism teaches that the first Kami sprouted upward from the earth like a rush; that after a long period of evolution, creative perfection was reached in Izanagi and Izanami, to whom was assigned the duty of completing the making of the earth out of the heavy precipitations from chaos, and then of furnishing it; and that after they had made lands and islands, they peopled them with gods. From this belief originated the Japanese cult for their ancestors. When the first conquerors divided the country into feudal territories, the chief man in each selected a Kami or heavenly-god as his ancestor or tutelary divinity, and erected a *miya* or shrine in his honor. They further believe that the deeds done in the body will be rewarded or punished after the spirit has left its natural tenement, and therefore derive pleasure in beatifying or deifying a man after his death who had lived a life of piety, purity, patriotism, and benevolence. Such a man was declared a Kami, and was worshipped in a temple erected by his family, his native town or city, or the country.

KAMINETZ-PODOLSK, *kâm-yēn'ĕts-po-dōlsk,* or PODOLSK, *po-dōlsk'*: town of w. Russia, capital of the government of Podolia; picturesquely situated near the Austrian frontier, 982 m. s. of St. Petersburg, on a steep rock above the river Smotritza, affluent of the Dneister. It is to be distinguished from the Kaminetz in Lithuania. Its foundation dates back from the earliest times. The most noteworthy buildings are the Gothic Cathedral and the Dominican Church. The fortifications, razed 1812, have been renewed. Kaminetz-Podolsk was, before the partition of Poland, the strongest bulwark of that country against the Turks. Pop. 34,500.

KAMPFER, *kĕmp'fer* (or Kaempfer), ENGELBRECHT: 1651, Nov. 16—1716, Nov. 2; b. Lemgo, Lippe, Germany: author. He was educated for a physician at Königsberg, was appointed sec. to the Swedish embassy to Persia 1638, entered the naval service of the Dutch E. India Company

as surgeon 1685, became physician to the embassy at Japan 1690, and returned to Lemgo 1693. He wrote many important works on the countries he had visited, of which the most valuable were *Amœnitates Exoticæ* (1712) and *History of Japan and Description of Siam* (1727). All his other MSS. are in the British Museum and have never been published.

KAMPTULICON, *kămp-tū'lĭ-kon:* kind of floor-cloth, said to be made of india-rubber and cork; much of it, however, consists of oxidized linseed oil and cork. The cork is reduced to a state resembling very fine sawdust, and kneaded up with the real caoutchouc, or with the artificial kind made of oxidized linseed oil, the whole being kept very soft by heat. The mass is then made into sheets by passing through cylinder rollers heated with steam. The sheets, when cold, are ready for use, when no ornamental surface is required; but very excellent designs may be painted on it as on ordinary floor-cloth. Kamptulicon, notwithstanding the ease with which it is made, is more expensive than the oil-cloth made by painting hempen or linen fabrics; it has, however, qualities which render it very valuable for special purposes; its elasticity to the tread makes it agreeable to the foot; and it is noiseless, consequently well adapted for hospital passages and other positions in which quiet is desirable; it is also impervious to damp, and thereby well suited to damp stone floors. See LINOLEUM; FLOOR-CLOTH.

KAMPYLITE, n. *kăm'pĭ-līt* [Gr. *kam'pulos,* curved]: an arseniate of lead, occurring in hexagonal prisms of a fine orange-yellow.

KAMSIN, or KHAMSIN, n. *kăm'sĭn* [Ar. *khamsin,* fifty]: a hot, dry, southerly wind, common in Egypt and the deserts of Africa; the simoom—so named because blowing for about fifty days, from Easter to Pentecost.

KAMTCHATKA, or KAMCHATKA, *kâm-chât'ka:* great peninsula, forming the s.e. extremity of Siberia; extending in lat. 51°—60° n., and in long. 155° 40′—164° 20′ e., 725 m. long, and averaging 190 m. in breadth; area estimated 237,266 sq.m. Kamtchatka has its continuation first in the Kurile Islands, then in the larger islands of Japan. A chain of volcanic mountains traverse the centre of the peninsula, and gives rise to the rivers, of which the Kamtchatka is 150 m. in length. There are about 14 volcanoes, the most remarkable of which—Klutchevsky—is 15,040 ft. high. This mountain now emits only smoke and embers; but in former times, eruptions occurred every seven or eight years. The soil, in general, is stony; but there are many tracts of mountain-slope which are arable. Agriculture is much hindered by untimely frosts, periodical rains, and sometimes by multitudes of mice and rats. The bread required by the inhabitants of the fortresses of Petropaulovsk and Tagil is supplied from Okhotsk. The winters are cold, and snow lies deep in

many parts. The principal occupations of the inhabitants are fishing and hunting. The most valuable domestic animal is a peculiar kind of dog which never barks. Kamtchatka was annexed to Russia at the end of the 17th c., after the expedition of the Cossack chief Atlasof. The population is composed of Kamtchadales (numbering about 2,000), Kourdetri, Omototzi, and Russians. The Kamtchadales—the preponderating race of the inhabitants—live mostly in the south. They are small in stature, with large head, broad face, black hair, small eyes, broad shoulders, hanging lips, and protruding stomach. Formerly, they lived in tents made of branches; they now dwell in huts. They have nominally embraced Christianity, but retain much of their savage nature and superstitions. Nijni-Kamtchatsk, chief town, is on the river Kamtchatka. The fort of Petropaulovsk, with a fine harbor covered with ice during only a brief period of the year, is most picturesquely situated, and has a healthful climate. Pop. 8,000.

KANAGAWA, *kâ-nâ-gā'wâ:* town of Japan, the shipping port of Yedo; with Hakodadi and Nagasaki opened by treaty to foreign commerce. It is on the n. edge of a bight on the w. side of the great bay of Yedo, and about 16 m. from Yedo. Here was located for a time the official section of the foreign community which, through the maneuvers of the Japanese, was established, not at Kanagawa, but at Yokohama, on the opposite point of the bay, and in a more isolated situation (see YOKOHAMA). Kanagawa still controls a large and important foreign trade, but its commerce has greatly declined since the commercial rise of Yokohama. The chief imports are cotton and woolen goods; the chief exports, silk and tea. The city is lighted with gas. Pop. about 90,000.

KANAK'AS. See COOLIE.

KANANÚR'. See CANANORE.

KANARIS, KONSTANTIN. See CANARIS.

KANA'WHA, GREAT. See GREAT KANAWHA.

KAND, or CAND, n. *kănd:* a term among Cornish miners for fluor-spar.

KANDAHAR'. See CANDAHAR.

KANDAVU: one of the Fiji Islands (q.v.).

KANDELE, n. *kân'dĕh-lĕh,* or KANTELE, n. *kân'tĕh-lĕh* [Finn.]: ancient minstrel's harp of the Finns; also a species of dulcimer, having five strings, in use among the same people.

KANDY, or CANDY, *kân'dē:* town in Ceylon, former cap. of the kingdom of Kandy; 75 m. from Colombo. Pop. (1901) 26,522. See CEYLON.

KANE, PA.: borough in McKean co., on the Baltimore & O., the Philadelphia & E., the Pennsylvania, and the

Pittsburg & W. R.Rs., 95 m. s.e. of Erie, 175 m. n. of Pittsburg and 122 m. from Buffalo. There are here several of the largest window glass factories in the world, plate glass and bottle factories, lumber-mills, woodenware factories and other flourishing industries. There are extensive natural gas and oil wells and deposits of silica in the surrounding country which are of great commercial benefit to the town. On account of its elevation of 2,000 feet, Kane is an attractive summer resort, with good hunting and fishing grounds in the vicinity. It was first settled in 1859 and became a borough in 1887. The government is vested in a burgess and a council of 9 members elected every three years. Pop. (1910) 6,626.

KANE, *kān*, Elisha Kent, M.D.: 1820, Feb. 3—1857, Feb. 16; b. Philadelphia: Arctic explorer. He entered Virginia Univ. 1836; afterward studied medicine, and entered the navy as surgeon, visiting China, India, E. Indies, and, under leave of absence, Arabia, Egypt, Greece, and western Europe. Soon after returning home, he was ordered to the w. coast of Africa 1846, May; but being attacked by fever, was compelled to return in the following April. He was then transferred to the military staff, and served in Mexico. 1850, May, he commenced his career of Arctic discovery as surgeon, naturalist, and historian to the first Grinnell expedition (see Grinnell, Henry). In the spring of 1853, he was again sent out, this time as commander of a second Grinnell expedition, in which he achieved important results, detailed in his *Second Grinnell Expedition in Search of Sir John Franklin* (2 vols. Phila. 1856). His incessant activity and his great intelligence made his explorations of much value; though it is now generally conceded that his theory of an open polar sea is only partially true—his mistake resulting from the fact that the constantly shifting ice-fields occasionally leave open spaces of water. On his return, in the autumn of 1855, honors were showered on the fortunate adventurer; he received gold medals from congress and the N. Y. legislature, and from the queen of Great Britain, and the Royal Geographical Soc. of London; but his health, precarious since 1844, was rapidly failing, and after a visit to London, where he grew rapidly worse, he sailed to Havana, where he died. His life has been written by W. Elder, M.D. (Phila. 1857), and others.

KANE, Sir Robert, M.D.: chemist: b. Dublin, 1809, Sep. 24; d. there 1890, Feb. 16. He was educated for the medical profession, and was received 1832 as a member of the Royal Irish Acad., and in the same year projected the *Dublin Journal of Medical Science*, which at first treated only of chemical and pharmical subjects. In 1840 he received the gold medal of the Royal Soc. of London for researches into the coloring matter of lichens; 1844-47, Kane was prof. of nat. philosophy to the Royal

Dublin Soc., and received 1847 the Cunningham gold medal of the Royal Irish Acad. for discoveries in chemistry. In 1846 he was president of Queen's College, Cork, resigning 1864. His important works are—*Elements of Chemistry* (1841-2, 49); *Industrial Resources of Ireland* (1844).

KANEKO, *kâ-nā'kō*, KENTARO, Baron: Japanese statesman; b. 1858, of a distinguished Samurai family. He was one of the students selected for foreign training, and coming to the U. S. graduated from the Harvard Law School in 1878. Returning to Japan, he became professor of law in the Imperial University at Tokio, and after entering the government service rose to the positions of minister of state for agriculture and commerce, minister of justice, chief secretary and life member of the House of Peers. While on a visit to the U. S. in 1899, Harvard Univ. conferred upon him the degree of LL.D. In 1904-05, he made an extended tour of the U. S., studying economic conditions, and during the peace negotiations between the Japanese and Russian plenipotentiaries at Portsmouth, was in frequent consultation with Pres. Roosevelt.

KANGAROO, n. *kăng'gă-rô* [a native Australian name signifying literally 'I don't understand,' said to the English who asked the name of the animal, and which was mistaken for the animal's name], (*Macropus*): genus of marsupial quadrupeds of which there are many species, almost all Australian, though a few are found in New Guinea and neighboring islands. The genus, which some naturalists subdivide, is the type of a family *Macropidæ*, including also the Kangaroo-rats or Potoroos (q.v.), which have canine teeth in the upper jaw, while the kangaroos have no canine teeth, and in their dentition generally, and in their digestive system, make a nearer approach than any other marsupial quadrupeds to the ruminants; the potoroos, on the other hand, approaching the rodent type. Kangaroos are said sometimes to ruminate. The stomach of kangaroos is large, and is formed of two elongated sacs. They are entirely herbivorous. The *Macropidæ* all are characterized by great length of hind-legs, while the fore-legs are small; but the radius allows a complete rotation of the fore-arm; and they make use of the fore-feet as organs of prehension, and for many purposes with great adroitness. The fore-feet have five toes, each armed with a strong curved nail; the hind-feet have four toes—one very large central toe, with a very large solid nail. The hind-feet are very long, through an extraordinary elongation of the metatarsal bones. The tail is very long, thick, strong, and tapering, and is of great use in balancing the animal in its leaps, and also for sustaining the body in its ordinary erect sitting posture, in which it uses the hind-legs and the root of the tail as a tripod. In this posture, also, it usually walks by the hind-legs alone. The head is in

form somewhat like that of a deer; the ears are moderately large, and oval; the eyes large, and the aspect is mild.

The GREAT KANGAROO (*M. giganteus*) is generally about 7½ ft. in length from the nose to the tip of the tail, the tail being rather more than 3 ft. in length, and fully 12 inches in circumference at the base. The height of the animal is rather more than fifty inches, in the erect sitting posture above mentioned; but it sometimes raises itself on its toes to look around it, and its height is then greater than that of a man. The WOOLLY KANGAROO or RED KANGAROO (*M. laniger*) rather exceeds it in size. The Great Kangaroo was discovered in Cook's first voyage, 1770; June 22, and until that time it may almost be said that kangaroos were unknown to Europeans, though a New Guinea species (*M. Brunii*) had been described by Le Brun 1711. It is of grayish-brown color, the fur moderately long and soft. It is found in many parts of Australia and in Van Diemen's Land. It sometimes attains a weight of more than 160 lbs. Its flesh is highly esteemed, and it is much sought after; but kangaroos are still very destructive to pastures in New S. Wales and S. Australia. It is not properly gregarious. The kangaroos are all timid animals, making their escape from their pursuers by extraordinary leaps. The Great Kangaroo often proves too swift for greyhounds. When driven to bay, it sometimes kills a dog by a single stroke of its hind leg, the great nail ripping him open at once. Some of the kangaroos inhabit open plains, some are generally found in forests, some are frequent on the snowy summits of the highest Australian mountains. They are of very various size; some are not much larger than a rabbit. They are easily tamed, and some species have bred in zoological collections.

For the exceedingly immature state in which young kangaroos are born, and for the manner in which they are nourished, see MARSUPIATA. Ere they finally desert the pouch of the mother, the young may be seen poking their heads out of it, and nibbling the herbage among which she moves.

KANGAROO' APPLE: species of Solanum (q.v.), (*S. laciniatum*), with somewhat shrubby succulent stem, smooth pinnatifid or entire leaves, and lateral racemes of flowers; native of Peru, New Zealand, Australia, and Tasmania, in which latter countries its fruit is called kangaroo apple, and is used as food. When unripe, it is acrid, and produces a burning sensation in the throat; but when perfectly ripe, it is wholesome.

KANGAROO' GRASS (*Anthistiria australis*): the most esteemed fodder-grass of Australia. It grows to a height much above that of the fodder grasses of Britain and the United States, affords abundant herbage, and is much relished by cattle. The genus is allied to *Andropogon*, and has clusters of flowers with an involucre. The

awns are very long and twisted, both in the Kangaroo Grass and in a nearly allied species, *A. ciliata,* one of the most esteemed fodder-grasses of India.

KANGAROO' ISL'AND: in Indian Ocean, off S. Australia; lat. 36° s., long. 137° e.; 95 m. in length e. to w., 25 m. in width n. to s., 1,970 sq.m. It has abrupt, indented shores, numerous hills covered with low, thick brushwood, and many shallow salt lakes. It was discovered by Capt. Flinders, and named from the animal that abounds there; and is now visited chiefly by whale and seal fishers. Pop. about 300.

KANG-HOA, or KANG-WA: mountainous island in the Yellow Sea, off Corea, near the mouth of the Han-Kang river; lat. 37°—38° n., long. 126°—127° e.; about 20 m. long and 10 m. wide, 160 sq.m.; chief town Kang-hoa. It has a fertile soil which yields large quantities of tobacco, rice, sorghum, maize, barley, beans, cabbage, and chestnuts, has been the refuge of the royal family in times of war for many generations, and for centuries was a favorite haunt of Chinese pirates. The last Europeans were expelled from the island 1866, and the same year the French government sent an expedition to Kang-hoa under Admiral Roze to avenge the murder of the French missionaries. The city of Kang-hoa with its important milit. establishments was destroyed, but no concessions were obtained from the government. In the following year the U. S. government sent an expedition under Com. Schufeldt to remonstrate with the native authorities for the burning of several American vessels by the Coreans, but this accomplished nothing. In 1871 another U. S. naval force was sent there under Admiral Rodgers, who attempted to sail up the river to the Corean capital June 1, to demand reparation from the government, but was fired on by the Coreans. The Americans returned the fire and soon silenced the forts. A few days afterward Admiral Rodgers made an attack on the forts on the Kang-hoa side of the river and captured and dismantled five, but gained no further advantage. In 1875 a Japanese gun-boat stopped at Kang-hoa for water and was fired on by the garrison. The following day she bombarded and captured the fort, and this act led to the Karoda treaty by which Corea made important concessions to Japan.

KANKAKEE, *kăng-ka-kē':* city, cap. of Kankakee co., Ill.; on the Kankakee river at the junction of the Ill. Central, the Cleveland, Cincinnati, Chicago & St. Louis, and other railroads, 56 m. s.w. of Chicago. It was settled in 1850 and received a city charter in 1854. It is in a rich farming and grazing country, with extensive neighboring coal-fields, beds of bog-iron ore, and stone quarries. The Kankakee river supplies abundant water power, and the city has become a busy manufacturing and agricultural trade centre. The principal industrial

establishments are agricultural implement works employing 600 men; piano factories, furniture factories, knitting works, and manufactures of sewing machines, starch, flour, bricks, tiles, nails, wagons, foundry products, mattresses, cigars, etc. Kankakee has good graded schools, St. Joseph's Seminary, Saint Viateur's College, Notre Dame Academy, public library, conservatory of music, handsome churches, asylums, hospitals, and city buildings. There are two national banks and two savings banks with a combined capital of $300,000. The government is vested in a mayor, who holds office two years, and a council of 10 members, one-half of whom are elected each year. The council elects the administrative officials and the health and local improvement boards. Pop. (1910) 13,986.

KANKAKEE: a river of northern Illinois, which has its rise in the northern part of Indiana, flows west and southwest and enters Kankakee co. in Illinois. From where it receives the waters of the Iroquois from the south, the course changes to the northwest until it enters Grundy co., where it unites with the Des Plaines river and forms the Illinois.

KANO, *kâ-nō′:* great manufacturing and mercantile town, capital of the province of Kano, in the state of Houssa, central Africa; lat. 12° 2′ n., and long. 8° 22′ e.; about 230 m. e. of Sokoto, 360 m. w. of Kuka. The province is estimated to contain 500,000 inhabitants, and from its beauty and wealth, has been called the 'Garden of Central Africa.' The wall which surrounds the town of Kano is 15 m. in circuit, and between it and the town, which is circular in shape and about 3 m. in diameter, a space intervenes large enough to supply the inhabitants with corn in case of siege. The houses are of clay, with flat roofs; or round huts with conical tops. The industry consists chiefly in the weaving and dyeing of cotton cloths, which are exported from Kano, far and near, to the value of abt. $150,000 annually. About 20,000 loads of natron pass through the town yearly from Bornu to Nupe; and about 5,000 slaves are annually exported. Pop. about 120,000.

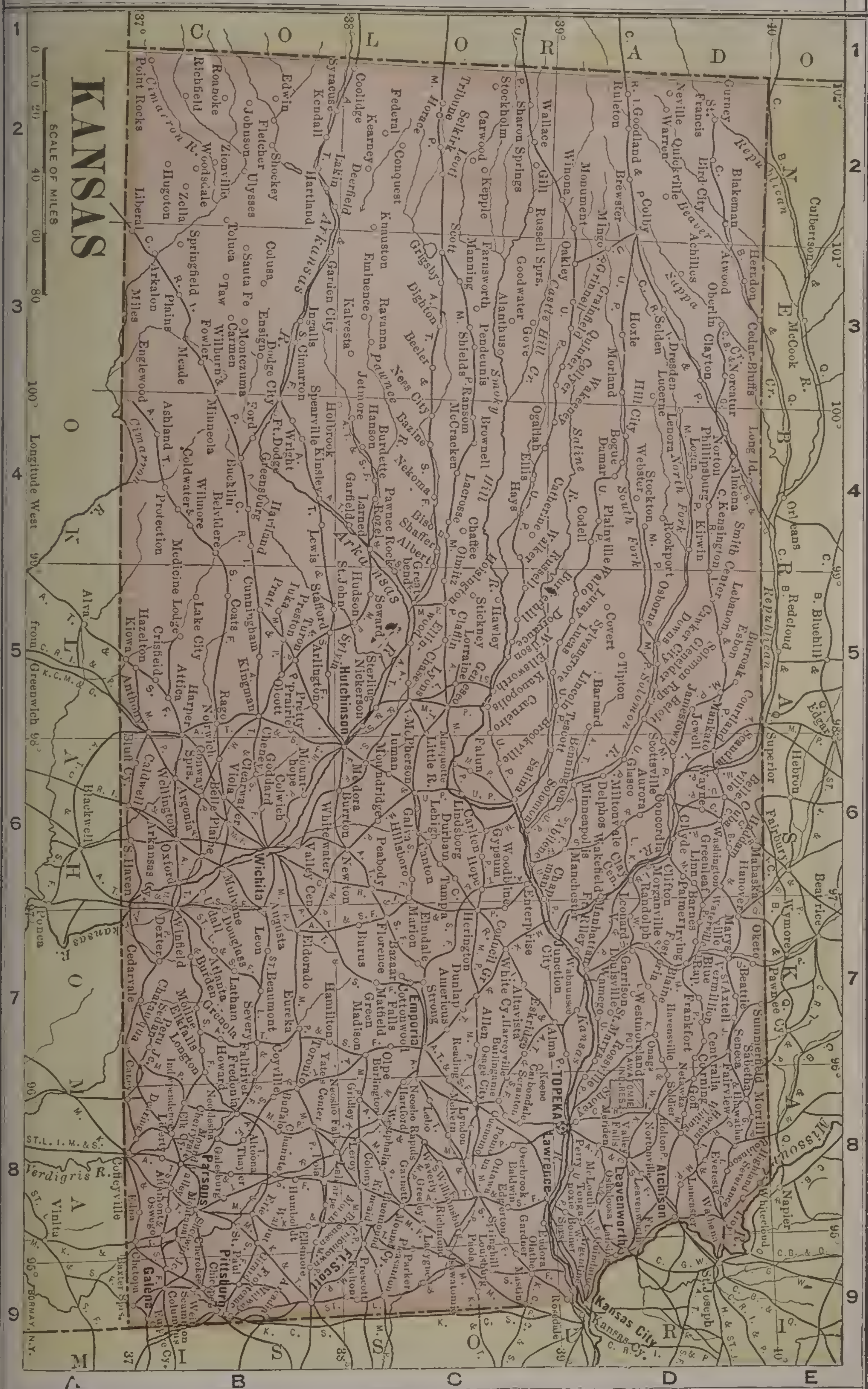
KANSA, in Hindu Mythology: king of the race of Bhoia, notorious for enmity toward the god Krishna. See VISHNU.

KANSAS, *kăn′sas:* a state of the Middle West; 21st in order of admission into the Union; named from the Indian word *Kanza,* having the double meaning of *wind* and *swift.* Its popular name is *The Sunflower State,* and it is also known as *The Garden of the West;* the state motto is *Ad Astra per Aspera*—'through difficulties to the stars.'

*Location and Area.*—Kansas is geographically the central state in the American Union; lat. 37°—40° n., long. 94° 38′—102° w.; bounded n. by Neb., e. by Mo., s. by

Area in Square Miles, 82,080. Population, 1,470,495.

Number of Counties, 105. Capital of State, Topeka.



Ind. Terr., w. by Colo.; length 400 m., width 200 m.; Missouri river frontage 150 m.; 82,080 sq.m. (53,531,200 acres); greatest elevation above the sea 3,175 ft., lowest 648 ft.; cap. Topeka.

*Topography.*—The surface in general is an undulating plateau, gradually trending from w. to e., with numerous hills 50-300 ft. high, and large tracts of rolling prairie, but no mountains. There are no lakes in Kansas worthy of notice, but the state has an excellent system of natural drainage in the Missouri, Kansas, and Arkansas rivers and their numerous tributaries. The n.e. and part of the n. are drained by the Missouri—which forms part of the e. boundary—and several affluents—the Republican, one of the branches of the Kansas river (400 m. long), Saline (200 m.), Solomon (300 m.), Big Blue (125 m.), and Grasshopper (75 m.); the centre by the Kansas (150 m.), and its Smoky Hill branch, which together traverse the entire length of the state; the s. by the Arkansas, which traverses nearly three-quarters of the state and has a tortuous flow (500 m.) in it, Walnut, Little Arkansas, and Pawnee Fork; the s.e. by the Neosha (200 m.), Osage (125 m.), and the Verdigris; and the extreme s.w. and along the s. boundary by the Cimarron and a number of tributaries of the Arkansas river. The e. and centre portions of the state are the best watered, in the more elevated w. water is less abundant and irrigation is resorted to in some regions. Most of the small streams are fed by perennial springs, and the greater part of the year's rains fall at the time when most beneficial—when grain and grass are up.

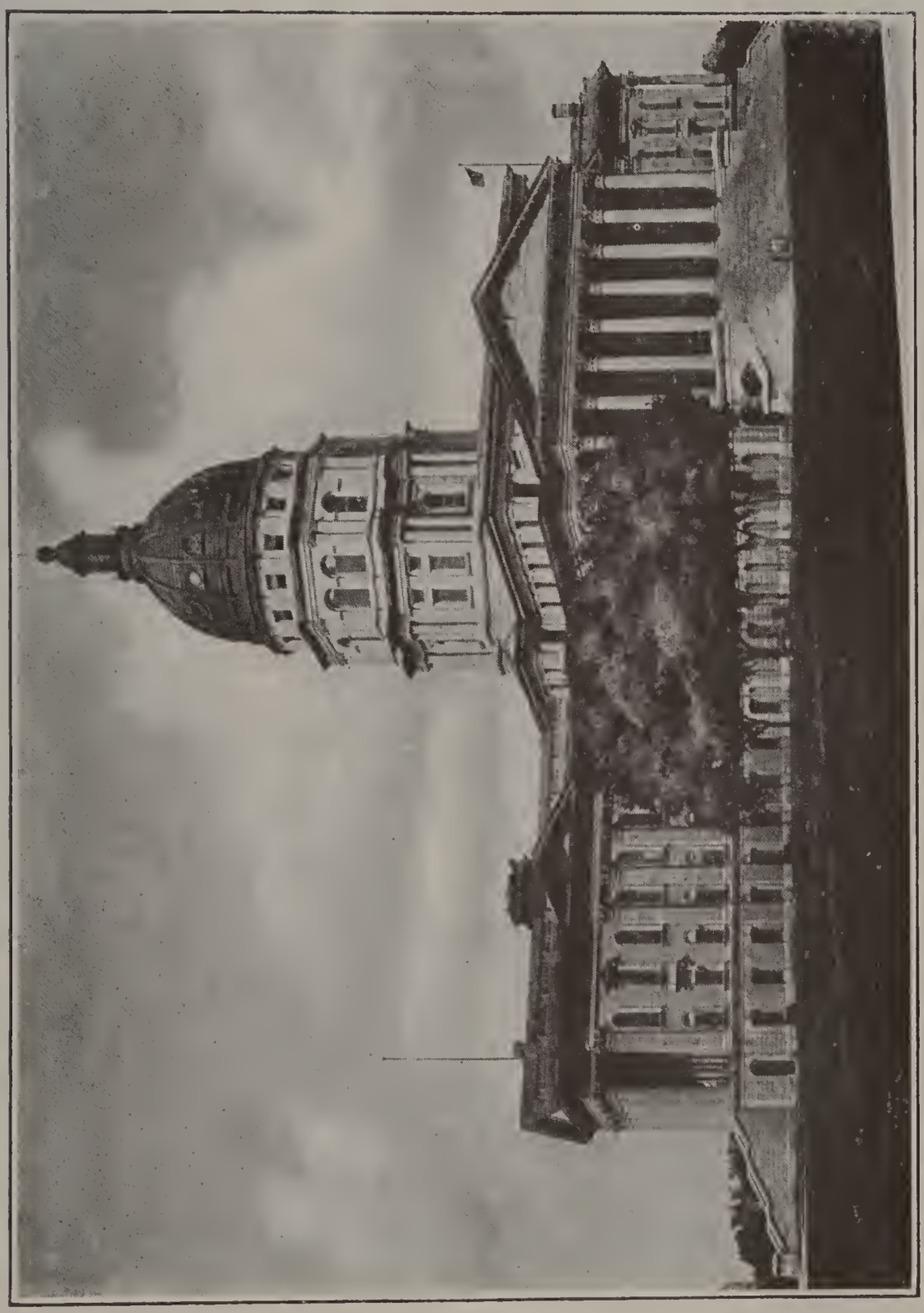
*Climate.*—The climate is pleasant, healthful, temperate; severe cold in winter is common but of short duration; summer heat, intense at midday, is not prostrating, owing to a continual breeze, which cools measurably in the evening; summer range of temperature 80°—100°, average annual rainfall 44.09 in.; average rainfall Mar. 1—Oct. 1, 34.15 in.; winter winds from the n.w., summer from the s.w. The atmosphere is remarkably clear the year round, and the state is recommended by physicians to people suffering from consumptive and severe bronchial affections.

*Geology.*—The Carboniferous system prevails in the e., covers a tract 208 m. long by 107 m. wide, with thickness varying from 403 to 600 ft., and comprises two strata, one 300 ft. below the surface, the other 400 ft. Excellent bituminous coal is taken from each, but the lowest stratum yields the best quality. Coal covers approximately one-fourth the area of the state. The annual production of coal in the S. averages approximately 5,000,000 short tons; valued at the mines at $6,000,000, although a single year's production has been known to reach almost 6,000,000 tons. Going w., the Permian system is first met, with its strata of magnesian limestone and gypsum, the system having a supposed depth

of 700 ft. and width of 50 m.; then the Triassic, with limestone, sandstone, selenite, and marls; and lastly the Cretaceous, carrying chalks and native quicklime, and abounding in well-preserved fossils, many of species but recently known, and others still unknown to science. Lead, zinc, alum, mineral paints, and numerous varieties of marketable building stones abound. In 1887, rock salt was first struck at a depth of 730 ft., at Ellsworth, then at Hutchinson (q.v.), n. of the Ark. river, at 450 ft., next at Kingman, at 665 ft., and subsequently at Lyons, at 785 ft., and at Anthony, at 925 ft. Early in 1888, salt was found at Nickerson, Great Bend, and Stirling. The first 'salt blocks' were erected at Hutchinson, and the rock salt industry was begun 1888, Mar. 15. This rock salt, obtained from the former 'Great American Desert,' is apparently inexhaustible in quantity, and repeated analyses show it to be almost absolutely pure, averaging 95-98 per cent. in purity. The soil of Kansas is in general a black clay loam carrying vegetable mold; 2-10 ft. deep on bottom lands, 1-3 ft. on uplands; lighter in color and deeper in the w. than in the e.; easily cultivated, quite free from stones, and exceeding productive; and exceptionally adapted to agriculture and grazing. Timber is abundant along the rivers in the e. part of the state, very scarce in the w., and between these extremes in the central. The noticeable varieties are oak, elm, black walnut, cottonwood, mulberry, willow, hickory, sycamore, box, white ash, elder, and locust. Fruit trees thrive finely in nearly all parts, particularly the apple, pear, peach, plum, and cherry; smaller fruits likewise thrive in the soil and climate; and grapes yield plentifully with but little care.

*Zoology.*—The early denizens of the 'Great American Desert' have become almost extinct, especially within the limits of Kansas. The great herds of buffalo which formerly overran the plains have disappeared from there and from nearly everywhere else, the elk has sought quieter regions, and but few deer, antelopes, black and brown bears, and panthers—once very common—are now found. There is still abundance of rodents and small game, several varieties of snake, about 300 species of birds, and more than 20 species of food fish in the rivers.

*Agriculture.*—There are about 200,000 farms in K., comprising approximately 45,000,000 acres, of which about two-thirds is improved land. The total value of all farm property, including lands, buildings and improvements, implements and machinery, and live stock, is estimated at almost $1,000,000,000. The principal crops are corn, wheat, oats, barley, rye, potatoes, hay, and flaxseed, besides which there are valuable crops of buckwheat, broom-corn, millet, sorghum, kafir-corn, timothy, clover, alfalfa, and other grasses. The dairying industry is extensive, while large returns are secured from the garden and horticultural products and



STATE CAPITOL AT TOPEKA.

from the cattle which are slaughtered or sold for slaughter.

*Manufactures.*—Owing to the lack of timber lands and iron deposits, manufacturing is confined principally to the conversion of farm products into marketable products, such as flour and meat. Slaughtering and meat packing represent the chief manufacturing industry, followed by flour and grist milling, cars and general shop construction, smelting and refining zinc, cheese, butter, and condensed milk production, foundry and machine-shop products, and brick and tile making. Altogether there are about 2,500 manufacturing establishments in the State.

*Finances and Banking.*—The bonded debt of K. is $520,000, part of which is held by private interests and the rest by various State funds; the total assessed valuation amounts to $2,752,097,452, and the tax rate is $12.50 per $1,000. There are well over 200 national banks in the State, nearly 650 State banks, more than 20 private banks, besides numerous savings banks and loan and trust companies.

*Railroads.*—There is slightly over 9,000 miles of track operated in K., divided among many different roads, besides which there are many street railways, whose aggregate mileage is over 300 miles.

*Education.*—K. spends nearly $7,000,000 in maintaining its public schools, there being altogether more than 400,000 pupils enrolled, with about 13,000 teachers. There are colleges and universities, both co-educational and for men only, normal schools, and schools of technology, theology, law and medicine, besides a college for women exclusively, private secondary schools, and many institutions of higher education, probably the most prominent among which is the State University. The illiterate population numbers about 30,000, of which the foreign-born whites and the negroes form approximately two-thirds. Among the colleges in the state are Baker University, Baldwin; Bethany, Lindsborg; Campbell College, Holton; Highland University, Highland; Kansas Wesleyan University, Silama; McPherson, McPherson; Midland, Atchison; Ottawa University, Ottawa; Southwest Kansas, Winfield; Saint Benedict's, Atchison; Saint John's Lutheran, Winfield; Saint Mary's, Saint Mary's; State Agricultural, Manhattan; State Normal, Emporia; and State University, Lawrence.

*Religion.*—All the religious denominations are represented in the State, the strongest being the Methodist, Roman Catholic, and Baptist Churches.

*Charities and Corrections.*—The chief institutions of this class are: Insane asylum, Osawatomie; Insane asylum, Topeka; Insane asylum, Parsons; Blind asylum, Kansas City; Imbecile school, Winfield; Deaf and Dumb school, Olathe; Soldiers' Orphans' home, Atchison; Soldiers' home, Dodge City; State penitentiary, Lansing; Industrial reformatory, Hutchinson; Industrial school,

girls, Beloit; Reform school, boys, Topeka. The Federal government maintains a military prison and a branch of the national soldiers' home at Leavenworth.

*Population.*—The local census of 1855 give Kansas a population of 8,501; this increased in 1860 to 107,206; in 1870 to 364,399; in 1880 to 396,096; in 1890 to 1,690,949. in 1900 to 1,470,495. The present population of the state, according to the local census of 1903, is 1,487,847. The state is divided into 105 counties and there are 118 cities and towns having a population of 1,000 or more. The 10 largest cities and their population are: Kansas City, 82,331; Topeka, 43,684; Wichita, 52,450; Leavenworth, 19,363; Atchison, 16,429; Fort Scott, 10,463; Pittsburg, 14,755; Lawrence, 12,374; Hutchinson, 16,364; Parsons, 12,463.

*History.*—The site of the present state of Kansas was visited and traversed by a Spanish exploring expedition under Francisco Vasquez de Coronado 1541 and by a French exploring party under Dutisne 1719. The part e. of the 100th meridian was acquired by the United States by purchase from France 1803, being included in the Louisiana territory, and the remainder by treaty from Mexico 1848. During this interval the e. part formed a portion of Louisiana territory and Missouri territory at different times. In 1820, when political parties were excited over the bill to admit Missouri territory as a state into the Union, congress passed an act designed to be a compromise between the slavery and anti-slavery advocates and containing a clause forever prohibiting slavery in all the territory acquired from France n. of lat. 36° 30′ n., excepting the part included within the limits of the proposed new state. Missouri was admitted in the following year as a state where slavery was permissible in accordance with the compromise bill. About this time white settlers began to take up land in the rich e. section of Kansas. In 1825, the celebrated Santa Fé 'trail' was opened, and the consequent extension of the overland route to the Pacific made the region more widely known and began to attract to it emigrants from various states. By 1831, Kansas had become sufficiently opened to warrant the establishment of several Protestant missions among the Indians, and soon afterward Jesuit priests and the Russian Princess Galitzin located there for missionary work. The annexation of Texas and the acquisition of a large territory from Mexico after the close of the Mexican war, stimulated the controversy in congress over slavery; and when California and New Mexico took preliminary steps to secure admission into the Union, party passion was temporarily allayed only by the famous 'omnibus bill' (see COMPROMISE MEASURES OF 1850). This excitement was followed by the movement to organize the territories of Kansas and Nebraska. As the bill contained a clause declaring the Missouri Compromise Act of 1820 to be inoperative and void in

regard to the proposed new territories, and left the question of slavery to be decided by the inhabitants of the territories, the struggle of the pro- and anti-slavery parties for possession of Kansas and Nebraska became fierce.

While the congress was engaged in a bitter contest over the bill, an emigrant aid company was incorporated by the Massachusetts legislature to encourage emigrants to remove to Kansas and to help them settle and protect themselves. The Kansas-Nebraska Bill was adopted 1854, May 30. In July the Connecticut legislature chartered an emigrant aid company, and within a few weeks the Massachusetts and Connecticut companies were busily engaged in forwarding emigrants from the free states. The n.w. states added largely to the stream. While this movement of free state people was in progress, similar organizations were formed in Missouri, Arkansas, and other pro-slavery states, and many colonies were planted in Kansas, with all the constituents of human servitude. That the two forces striving for supremacy should meet in violence was inevitable. Pro-slavery associations were organized to remove from Kansas all emigrants who went there under the auspices of northern and free state aid societies, and a powerful society was formed in Missouri for the express purpose of extending slavery into Kansas and other territories. In an election for territory delegate to congress and in 3 elections for members of the territory legislature, armed bands from Missouri seized the polls and allowed a large number of illegal votes to be cast. The first legislature that assembled expelled the anti-slavery members and gave their seats to pro-slavery men. The first governor, A. H. Reeder, who had set aside the illegal returns for the legislature, was severely denounced, and after vainly attempting to intimidate him the pro-slavery party caused him to be removed on charges of corruption in purchasing Indian lands. Then the legislature adopted a most stringent pro-slavery act, which among other provisions made it a capital offense to aid slaves in escaping into or out of the territory, and required all voters to swear to support the fugitive slave law. This body designated Lecompton as the capital of the territory. Soon after William Shannon had succeeded Reeder as governor, the free-state party held a convention at Big Springs, protested against the acts of the legislature, elected Reeder delegate to congress, held a constitutional convention at Topeka, and 1855, Nov. 12, adopted a constitution for the state of Kansas in which slavery was forever prohibited. This constitution was submitted to popular vote Dec. 15, when, the pro-slavery men abstaining from the polls, it was accepted, 1856, Jan. 15, the free state party held an election for state officers and a legislature under the Topeka constitution, and Mar. 4 the new legislature was organized and the governor, Charles Robinson, and other state officers inaugu-

rated. On May 5 the free-state leaders were indicted by a pro-slavery grand jury for treason, in having organized a state government under the Topeka constitution. Lawrence, a free-state settlement, mostly of New Englanders, was a second time besieged by a large armed body of men from Missouri, Georgia, and Alabama, enrolled as Kansas militia, and in spite of promises of personal and property protection on the inhabitants surrendering their arms, was plundered and burned May 21. Fatal encounters occurred at Pottawatomie May 26, and Black Jack June 2; the free-state legislature at Topeka was dispersed by U. S. troops July 4, the free-state troops captured a fortified post near Lecompton Aug. 14, Gov. Shannon returned to the free-state men the cannon captured at Lawrence for the prisoners that they had taken at Lecompton Aug. 17, and a few days later John W. Geary was appointed governor.

Pending Gov. Geary's arrival, the terr. sec. proclaimed the terr. to be in a state of rebellion and mustered an armed force at Lecompton, while ex-U. S. Senator Atchison, of Missouri, gathered a second at Santa Fé. On Aug. 29 Atchison attacked Osawatomie, held by the free-state party under John Brown, and burned it, and the next day the free-state men at Lawrence marched out to attack Atchison, but he retreated into Missouri. Gov. Geary reached Lecompton Sep. 8, released the indicted free-state men on bail, called upon all armed bodies of men to disband, and promised protection to the free-state party. But the Missouri men mustered a new force of 2,000 men, and were marching with artillery to attack Lawrence, when the gov. with U. S. troops interposed and persuaded them to withdraw to Missouri. After causing the removal of Chief-Justice Lecompte, Gov. Geary reported in Dec. the restoration of peace and order. 1857, Jan. 6, the Topeka-constitution legislature met at Topeka. The following day it organized, and immediately afterward the U. S. marshal arrested the president, speaker, and a number of the leading members on a charge of having undertaken the acts of legislators without lawful appointment. As soon as this body had thus been forced to adjourn, the pro-slavery leaders convened their legislature at Lecompton and provided for holding a constitutional convention. A year previous a committee of the U. S. senate had reported that every election (in Kansas) had 'been controlled, not by the actual settlers but by citizens of Missouri,' and now the house of representatives passed a bill declaring null and void the acts of the pro-slavery legislature, and also declaring that 'the said legislature was not elected by the legal voters of Kansas, but was forced upon them by non-residents.' When this bill went to the senate it was defeated, and when, later, the senate refused to recognize the removal of Chief-Justice Lecompte, Gov. Geary resigned his office. Robert J. Walker was appointed his

successor. In June the pro-slavery men elected delegates to their constitutional convention, the free-state party abstaining from voting. In the ensuing territorial election, under assurances of protection from Gov. Walker, the free-state party cast more than double the number of pro-slavery ballots, and an attempt to overcome this majority by a falsified list of nearly 2,000 names taken from a Cincinnati directory was frustrated by Gov. Walker. The pro-slavery constitutional convention met at Lecompton, adopted a constitution which declared inviolable the right of owners to their slaves and prohibited the legislature from passing an emancipation act, and voted to submit it to popular vote on Dec. 21. Gov. Walker opposed the proposed constitution with great vigor, and even went to Washington to remonstrate against its reception by congress, but without avail. The pres. received and approved a copy before the gov. arrived, and when the latter became aware of the situation he at once resigned his office. He was succeeded by James W. Denver. On Dec. 21 the pro-slavery constitution was nominally adopted by the people, though by glaring frauds, and an election for officers under it was held 1858, Jan. 4. This constitution was again voted on by the people on the day of the state election under the Lecompton scheme, and was rejected by a large majority. At a special election directed by congress Aug. 3, this constitution was defeated again.

In 1859, Jan., the territorial legislature ordered the question of calling another constitutional convention submitted to popular vote. The result favored such a convention, and it was held at Wyandotte July 5-27. A constitution prohibiting slavery was adopted, submitted to the people Oct. 4, and by them ratified by a vote of 10,421 to 5,530. Under this, state officers and representatives in congress were chosen 1859, Dec. 6, and 1861, Jan. 29, the terr. was admitted into the Union as a free state. Through the long and bitter struggle the free-state party were the most numerous within the limits of Kansas, but the pro-slavery minority had the material support and political sympathy of several neighboring slave states and of the federal govt. During the civil war, Kansas furnished more than 20,000 men to the Union army, and lost many lives and considerable property by irregular warfare. Its subsequent development and present prosperity have been remarkable.

The most notable events in recent years were the political changes of 1892 and 1894. In the former year the democrats supported the populist candidates for presidential electors, and by this successful fusion took the state from the republicans. The fusion was also effective in the state elections, L. D. Lewelling receiving 163,507 votes to 158,075 for A. W. Smith (rep.) and 4,178 for J. G. Pickering (pro.) for governor, and the fusion candidates for all other state offices being elected

by pluralities of 3,820—8,644. In the congressional elections, the fusion candidate for congressman-at-large was elected, and from the districts 3 republican and 4 populist candidates. In 1894, wholly because of local causes, there was a complete overturning in the personnel of the state government. Of the total vote for gov. (299,233), Edmund N. Morrill (rep.) received 148,697; L. D. Lewelling (pop., renominated) 118,329; David Overmyer (dem.) 26,709; and I. O. Pickering (pro.) 5,496, giving Morrill a plurality of 30,368. In the congressional elections the republican candidates for the state-at-large and in 6 districts were erected, besides one populist candidate. Excepting officers with unexpired terms, the state government became wholly republican 1895. In that year there was an election for chief justice of the supreme court, which resulted in the choice of David Martin (rep.), who received 124,272 votes to 42,888 for C. K. Halliday, Jr. (free silver), his only opponent.

*Government.*—The executive authority is vested by the constitution in a governor elected for 2 years; the legislative in a general assembly comprising a senate of 40 members elected for 4 years, and a house of representatives of 125 members elected for 2 years. The judicial authority is vested in a supreme and other usual state courts. Supreme court judges are elected for terms of 6 years each. The elective state officers include governor, lieutenant-governor, secretary of state, auditor, treasurer, attorney-general, state superintendent of public instruction, commissioner of insurance, 7 justices of the supreme court, and 3 members of the state board of railroad commissioners. Kansas has 8 representatives in the lower house of congress, of which 7 are chosen by districts and 1 at large. Women have the right of suffrage at municipal, bond and school elections. They have been elected to municipal and school offices, and in some cases to county offices.

The successive governors with their terms of service are as follows:

*Territory.*

| | |
|---|---|
| A. H. Reeder.....1854-55 | James W. Denver.....1858 |
| Wilson Shannon.....1855-56 | Samuel Medary.....1858-59 |
| John W. Geary.....1856-57 | Frederick P. Stanton.1859-61 |
| Robert J. Walker....1857-58 | |

*State.*

| | |
|---|---|
| Charles Robinson.....1861 | John A. Martin.....1885-89 |
| Thomas Carney.....1861-65 | Lyman U. Humphrey.1889-93 |
| Samuel J. Crawford.1865-69 | L. D. Lewelling.....1893-95 |
| James M. Harvey...1869-73 | Edmund N. Morrill...1895-97 |
| Thomas A. Osborne..1873-77 | John W. Leedy.....1897-99 |
| George T. Anthony..1877-79 | W. E. Stanley.....1899-03 |
| John P. St. John....1879-83 | W. J. Bailey.....1903-05 |
| George W. Glick....1883-85 | E. W. Hoch..... 1905-07 |
| | Walter R. Stubbs. 1907- |

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KANSAS (or KAW) RIVER: draining the n. portion of the state of Kansas. It is formed in Salina co. by the junction of the Solomon river (300 m. long), and the Smoky Hill river (which has itself received an affluent 200 m. long); and from its junction flows e. abt. 175 m., receiving the Big Blue from the n., and emptying into the Missouri near Wyandotte, 750 ft. above sea level. The Kansas and its tributaries are not navigable.

KANSAS CITY: city; cap. of Wyandotte co., Kan.; at the junction of the Kansas and Missouri rivers; on the Kansas City, Northwestern, the Missouri Pacific, and the Union Pacific railroads; opposite Kansas City, Mo. (q.v.); 325 m. w. by n. of St. Louis. It is the second largest livestock market in the world, the second largest slaughtering and meat packing point, and the largest grain market beyond the Mississippi, and in many respects its interests are identical with those of its larger neighbor. The Kansas river is here crossed by 15 bridges, and the city has direct railroad communication with all parts of the country by 14 great trunk lines and several smaller ones. Besides the immense stock yards and the slaughtering and meat packing establishments, the other principal industrial interests are represented by railroad car shops, machine shops, grain elevators, smelters, iron and steel works, flour mills, soap and candle factories, wholesale grocery houses, lumber and brick yards. The combined slaughtering and meat packing industries of both cities are capitalized at $15,000,000, and have an annual output averaging in value over $77,000,000; the production of other manufacturing interests amount in value annually to nearly $83,000,000. The assessed property valuation of the city is over $10,500,000, and the various civic departments are liberally maintained. The system of water works is supplied from the Missouri river, and the city has gas and electric lighting, electric street railroads, good graded schools, Carnegie library, public parks, handsome churches, charitable and benevolent institutions. Notable are: Kansas City Univ. (Meth. Prot.), founded 1896; state institution for the blind; college of medicine and surgery; Bethany and St. Mar-

garet's hospitals. In 1902, Aug., a cyclone wrought considerable havoc, damaging and destroying many houses and public buildings. Pop. (1900) 51,418; (1910) 82,331.

KANSAS CITY: next to St. Louis, the largest city in the state of Missouri, and the capital of Jackson county, is located on the Missouri river near the junction of that stream with the Kaw (Kansas river), on the western border line of the state. Pop. (1900) 163,750; (1910) 248,381.

*History.*—The name is derived from the Kansas tribe of Indians which with the Osages, Shawnees and Wyandottes held possession of a considerable territory bordering on the Missouri river and extending south for a distance of 50 or more miles. The first white man to settle in the vicinity, at the mouth of the Kaw river, was Louis Barthelot, a trapper, followed a year later by Anguste Chouteau, who in 1821 built a trapper's cabin at the foot of the bluff near the place where the Burlington bridge now crosses the river at Kansas City.

The meeting point of the two rivers abounded with beaver, and Chouteau found trapping for these animals so lucrative that his success soon attracted other hunters, and in 1823, a settlement was formed which was supported wholly by trade in beaver skins. Chouteau established a trading post under the bluff which he successfully maintained until 1826, when a flood swept away his storehouse, together with a dozen or more cabins that composed the settlement. In the meantime a considerable trade in furs and peltries had developed, transportation of which on the Missouri was made by keel boats until 1825, when steamboats were put into service, extending their trips as far as the mouth of the Yellowstone. The first two steamboats that attempted to combat the strong current of the Missouri were the *Expedition* and the *Independence,* both of which started from St. Louis in 1819. The former was disabled at a point where the town of Glasgow now stands, but the latter continued her progress, carrying a Yellowstone Expedition, and completed the trip for more than 200 miles up the latter stream. A second expedition was sent out a few months later, in the same year, on a boat named *Western Engineer,* that also accomplished the ascent of the Missouri and the Yellowstone, which proving the navigability of these rivers by light draught steamers, transportation by this means was regularly inaugurated in 1825. Thereupon a rapid settlement along the Missouri began, as the fur trade offered great inducements to pioneers.

Chouteau, in no wise discouraged by the flood calamity mentioned, built another warehouse at a point near where Cleveland Ave. now intersects the river, and resumed his trading with Indians. In 1828, James H. McGee settled in the same vicinity and was the earliest white neighbor of Chouteau's, and between them a warm friendship was engendered by their mutual needs of fellowship and pro-

tection. Some settlements were formed in what is now Jackson county, following the treaty of 1825, whereby the Indian (Osage) titles to lands in that district were extinguished. The town of Independence was founded in 1827, but was several miles from the river; in 1833, Westport, which is now a part of Kansas City, was located four miles south of the river; and at the same time Westport Landing was established where steamboats discharged supplies, and reloaded with peltries. The business became so great that additional facilities to care for it became imperative. Difficulties, however, interposed, for the south bank of the Missouri, at this point, was a bluff, and to make the landing easily accessible for the handling of freight it was necessary to cut a way through the obstruction and create a wharfage space by reducing hills more than 100 feet in height, so as to form a level space for warehouse purposes. This was accomplished, however, and in 1838 Kansas City was located to replace Westport Landing. The first structure erected was a warehouse on the newly made levee, at the north end of what is now Main St., followed by the building of a hotel nearby, but on account of the imperfect titles to land in the vicinity few other improvements were made until 1846, when titles were adjusted and the extension of Kansas City began in great earnest, notwithstanding the impediments offered by the character of the location.

The country west of Kansas City was occupied by Indians, but across the plains lay Oregon, California and Mexico, with many military posts scattered between. Communication with these posts, and with settlements in Mexico and on the coast, led to the inauguration of overland freight transport by means of wagons drawn chiefly by oxen. Steamboats brought supplies up the Missouri to Kansas City, which being the nearest river point to the great southwest, soon became a distributing depot of rapidly growing importance. Independence was for a while the eastern terminus of the Santa Fé trail, but steamboats landing their freight at Kansas City soon caused the new town to supplant Independence, and conditions which promoted this change operated naturally to make Kansas City the metropolis it has since grown to be. For when steamboats were superseded by railroads, Kansas City presented advantages of location as conspicuous as the town enjoyed when first made a river depot for distributing supplies over the west and southwest. As the town gained in population the high bluffs of limestone and the lofty hills of clay disappeared, and deep ravines gave place to streets, until the results of almost infinite labor are shown in avenues, boulevards, parks and structures that compare favorably with those of the largest cities in America. There were several contributing causes to the rapid and permanent growth of Kansas City other than those mentioned. Be-

sides income from traffic in furs, peltries, buffalo robes, the Indians who occupied territory tributary to the city, received large annuities twice a year from the government, and this money was spent at the stores and drinking places in Kansas City. The Mexican war created an immense demand for oxen, horses, mules, wagons, and provisions, all of which were purchased in Kansas City because it was the nearest market. Then came the Oregon and California emigration, following the gold discoveries, and Kansas City became a principal gateway to the west. In swift succession, promoting the growth of the city, were the gold discoveries in Colorado and the Mormon War in Utah, all aiding the commerce of the place which long before had become a great wholesale emporium.

Kansas City suffered a reverse of fortune during the civil war and for a time lost nearly all her wholesale trade to competing cities, but her natural commanding situation was so powerful that the close of hostilities brought speedy renewal of her prestige, and trade that grew at an amazing pace, with few interruptions, up to the present.

*Railways.*—As the advantage of her location made Kansas City a great distributing center in the days of wagon transportation her position naturally commanded the attention of railroad builders and her development has accordingly been promoted even more markedly by continental lines than it was previously by steamboat transportation. The Missouri Pacific and Hannibal & St. Joe (now the Burlington) were the first roads to reach the city, the former in 1865, and the latter two years later. The Burlington entered Kansas City by the first bridge built across the Missouri. Since 1865 roads terminating in and passing through the city have multiplied until the city is now the second largest railroad centre in the United States, being reached by 21 trunk lines and 40 branch roads. A $2,000,000 union station is being built to accommodate the enormous passenger and express traffic of the city. The remarkable growth of Kansas City is also indicated by an admirable system of street cars for urban and interurban travel. The system now comprises 223 miles of single track, operating 500 cars, with gross earnings of nearly $5,000,000. There are 32 distinct lines, 23 of which enter the business centre.

*Industries.*—Among the largest interests in Kansas City is the packing and live stock industry, the importance and magnitude of which are shown by the following statistics of 1906. There are eight large packing houses and four comparatively small ones in which the aggregate of capital invested is $20,000,000. The daily capacity is 15,600 cattle, 36,500 hogs, 16,700 sheep. The average number of persons employed in the packing houses is 12,500, and the average annual wages account

are $6,500,000. The stock yards of Kansas City have a daily capacity of 41,000 cattle, 35,000 hogs, 15,000 sheep, 5,000 horses. The largest receipts reported in any day were 29,216 cattle, 5,053 calves, 31,449 hogs, 23,239 sheep. In 1906, 725,000 head of cattle were shipped from Kansas City to the feed lots of the corn belt states. The American Royal Live Stock Show is the title of an exhibition held annually at Kansas City, at which $30,000 in premiums are distributed to live stock exhibitors, the purpose being to encourage the industry of pure bred cattle. Next to the packing and live stock industries of Kansas City the grain trade assumes supreme importance. The elevator capacity is about 10,000,000 bushels, and 2,000,000 bushels of grain is the average amount handled daily. The receipts for 1905, the last report at hand, were 40,008,000 bushels of wheat, 21,508,000 of corn, 6,874,500 of oats. As a milling centre Kansas City is excelled only by Minneapolis, the daily output of flour being about 15,000 barrels.

*Manufactures.*—The number of manufacturing establishments in Kansas City in 1905 was 712, and the number of stores and shops of all kinds 2,116; value of manufactured products $132,204,099, wages $11,396,881. Great impetus has been given to manufacturing in Kansas City by the introduction of natural gas, piped from the oil district of southeastern Kansas and distributed throughout the city for fuel and illuminating purposes and furnished at about one-third the price charged for manufactured gas. The supply is adequate and the use of the natural products is now general in the city in residence and manufacturing plants. As a wholesale distributing point Kansas City, next to St. Louis, is the largest in the west and development of the great southwest is contributing amazingly to the up-growth of the city.

*Banking and Finance.*—The banking interests of Kansas City are in keeping with the manufacturing and commercial industries, but as only six of the 17 banks of the city are members of the clearing house association, the total transactions are not reported. The annual aggregate, no doubt, exceeds one billion dollars. According to the comptroller's report 1906 the net city debt is $4,273,708.99. The assessed valuation of real estate and improvements, for the same year, was $72,279,170. Merchants' tax and personal property, including banks, was $34,011,392. Department expenditure, exclusive of water and parks, $1,950,847.72.

*Water Supply.*—Kansas City obtains its water supply from the Missouri, the pumping station being located at Quindaro, Kan., far above the contamination of suburban towns on the river. The water is lifted into settling basins where, after being clarified, it was formerly piped over the Kaw river by a large aqueduct, and thence by high pressure engines is distributed throughout

the 318 miles of water mains in the city. The city supply is now conducted through a tunnel under the Kaw. The water works belong to the city, and cost about $7,000,000, and are operated by the municipality at a profit.

*Parks, Etc.*—The park system of Kansas City includes 16 parks that comprise a total of 1,889.66 acres, 227 acres of parkways, 39 miles of boulevards, 14.16 miles of park drives. The total cost of the system was $7,108,318.61. In addition to the park grounds within the municipality is a beautiful tract nine miles from the city and intersected by a small stream called Blue river. This tract of natural park comprises 1,354 acres, and is a gift to the city by Thos. H. Swope, hence in honor of the donor is called Swope Park. It is being cleared and improved at the expense of the municipality. The city has 378 miles of sewers, 222 miles of paved streets, of which 148 miles are asphalt.

*Education.*—Kansas City is justly proud of her public schools, which rank with those of the largest cities in the world, as to character of buildings, methods of instruction, facilities for laboratory demonstrations and manual training. The city maintains 55 public schools, of which 4 are high schools, with manual training departments, and with 25 of which kindergartens are connected. Eleven of the 55 school houses are used exclusively for colored pupils. The total enrollment in all schools is 31,337, of whom 3,004 are colored. The total annual cost of maintenance, including interest on bonds, sinking fund, and supplies, is $1,559,443.73, as reported for 1906. A large public library, art gallery and museum, that cost $250,000, is owned by the city and is managed by the board of education. The library contains 100,000 volumes and the museum annex has a fine collection of Indian relics and natural history specimens. The collection of paintings that hang in the art gallery is valued at more than $200,000.

*Buildings.*—Among the very prominent public buildings in Kansas City is Convention Hall, a steel construction coliseum that has a seating capacity of over 15,000, built by public subscription, at a cost of $200,000, to accommodate and to attract vast assemblages, on conventions and concert occasions. This mammoth hall, the largest, perhaps, in America, besides serving many useful purposes, has done much to advertise the enterprising public spirit that animates the citizens, and the importance of the city. Among other public buildings are the city hall, county court-house, post-office, public library, Board of Trade building, New York Life building, Central high school, and the Manual Training high school, four large theatres, and also libraries, reading rooms, and numerous churches.

*Government.*—At the head of the city government is the mayor, whose term of service is two years; upper

house of aldermen, consisting of 14 members, whose term of service is four years, elected at large; lower house councilmen, 14 members, term of service two years; city treasurer, auditor, police judge, and city attorney, elected biennially. The other officers are nominated by the mayor and confirmed by the upper house. The board of park commissioners, the chief of the fire department, engineer, city physician, superintendent of buildings, superintendent of streets, plumbing inspector, superintendent of workhouse, etc., are appointed by the mayor and confirmed by the upper house. The board of police commissioners is composed of three members, the mayor, and two citizens appointed by the governor.

*Bibliography.*—Miller, *History of Kansas City* (1881); Case, *History of Kansas City* (1888); Greenwood, *Sketch of Kansas City* (1903); Chick, *Kansas City Annual* (1907).

KANSAS INDIANS: tribe of the Dakota family and Osage branch, founded by Father Jacques Marquette (q.v.) on the Missouri river between the lands of the Missouris and the Osages 1673. In 1815, they made a treaty of peace with the United States govt.; 1825, ceded all their lands in Mo. and some w. of it, retaining their Kansas river reservation; 1846, ceded other lands for money and a reservation of 20 m. s. on the Neosho river; 1856, their half-breeds were forced from their reservation by squatters; 1861, they sent a company of warriors to the U. S. army; 1867 and 69, further treaties were made with them because of the overrunning of their reservation by settlers; and 1872, congress directed their reservation and trust lands to be sold, one-half of the proceeds to be invested for them, the remainder to be used in establishing them on the Osage reservation in Ind. Terr. They have decreased in numbers from 1,500 to 211.

KANSAS-NEBRASKA BILL: a bill passed by congress in 1854; the last of three compromises between the aggressive slavery expansionists of the South and their antislavery opponents in the North. It is famous because, by its repeal of the first, the Missouri Compromise (q.v.), it precipitated the organization and rapid growth of the Republican party, and especially incited the radical abolition sentiment of the North to aggressive action, thus causing or hastening the secession of the Southern States and the resulting Civil War. Its passage was mainly due to the leadership of Stephen A. Douglas (q.v.), of Illinois. The second compromise occurred when New Mexico and Utah came to be organized as territories in 1850. The compromise consisted of the provision, which was also one of the two principal features of the Kansas-Nebraska Bill, that when these territories came to be admitted as states they should come in with or without slavery as their constitutions, which would be framed by the people, might prescribe. The strengthen

ing of the fugitive-slave law was the other feature of this compromise. This settlement of 1850 was the first step toward the final compromise, the Kansas-Nebraska Bill.

As early as 1844, Stephen A. Douglas introduced in the house of representatives a bill 'to establish the territory of Nebraska,' and Douglas afterward asserted that he took this method of serving notice on the secretary of war to discontinue using that territory as the dumping-ground for Indians. In 1848, Douglas, now chairman of the committee on territories in the senate, introduced in that body a bill for the same purpose. In 1851, Dec., Willard P. Hall of Missouri gave notice in the house of a bill for the organization of Nebraska; but none of these bills got beyond the committee stage. On 1853, Feb. 2, William A. Richardson of Illinois, the leading lieutenant of Douglas in the house, introduced still another bill 'to organize the territory of Nebraska.' This bill, which, like all of its predecessors in question, made no reference to slavery, passed the house 1853, Feb. 16, but in spite of the strenuous endeavors of Douglas in its behalf, it failed of consideration in the senate. The long debate over this bill in the house disclosed clearly that the primary object of members from the Northwest, who were its champions, was to protect and encourage travel over the great upper line to the Pacific coast, and make way for the ultimate construction of the already much talked of Pacific railroad; while members from the South, and especially from the Southwest, were bent on keeping this northern region open for the colonization of their undesirable Indian tribes, with the purpose of securing travel and the railroad to the Pacific coast through their own country.

Early in the session of the next congress—1853, Dec. 14—Senator Dodge of Iowa, a coadjutor of Douglas in this enterprise, introduced 'a bill to organize the Territory of Nebraska.' This bill also originally contained no reference to slavery; but by amendment it became the famous Kansas-Nebraska Bill, which finally became a law 1854, May 30. On 1854, Jan. 4, the senate committee on territories, through Douglas, reported a substitute for the Dodge bill which contained the compromise provision of the Utah and New Mexico acts; namely, that 'the Territory of Nebraska, or any portion of the same, when admitted as a state or states, shall be received into the Union with or without slavery, as their constitutions may prescribe at the time of their admission.' In his famous report, accompanying this bill, Douglas points out that 'eminent statesmen hold that congress is invested with no rightful authority to legislate upon the subject of slavery in the territories, and that therefore the 8th section of the Missouri Compromise is null and void; while the prevailing sentiment in large sections of the Union sustains the doctrine that the constitution of the United States

secures to every citizen the inalienable right to move into any of the territories with his property of whatever kind or description, and to hold and enjoy the same under the sanction of law.' The report pointed out also that under this section it was a disputed point whether slavery was prohibited in the new country by valid enactment, and advised against the undertaking by congress to decide these disputed questions. The bill was further amended so as to provide that all questions pertaining to slavery in the territories and the new states to be formed therefrom be left to the decision of the people residing therein; that cases involving title to slaves be left to the courts; and that the provision of the constitution in respect to fugitive slaves should be carried out in the territories the same as in the states. On Jan. 16, Senator Dixon of Kentucky offered an amendment, which was accepted by Douglas, expressly repealing the slavery restriction clause of the Missouri Compromise; and the bill passed with these amendments.

The Kansas-Nebraska Bill was distinguished by more completely safeguarding the rights of Indian occupants than any previous territorial organic acts had done; and likewise in being the first territorial bill of that class which provided for the choice of the members of both houses of the legislature by popular election, to drop the provision requiring the submission of all acts of the legislative assembly to congress for approval. The territory organized by this bill comprised all of the unorganized part of the Louisiana Purchase north of the 37th parallel, which comprised all of the Purchase north of that line except the states of Iowa and Missouri, and that part of the territory of Minnesota between the Mississippi river on the east and the Missouri and White Earth rivers on the south and west.

KANSAS STATE AGRICULTURAL COLLEGE: a coeducational institution, located at Manhattan, Kan.; established in 1863 by the presentation to the state of Bluemont College. The college has excellent opportunities for experimental works as it cultivates 544 acres of land; 323 acres of which is owned by the college, and 221 acres leased. It is not a classical school; the departments, the courses of which lead to the degree of bachelor of science, are agriculture, English, mechanical and electrical engineering, general and domestic science. It has also a preparatory department, a music school, and a trade school. It has several short courses, as: dairying, 12 weeks in winter; agriculture and mechanics, 12 weeks in winter, for two years; horticulture and mechanics, 12 weeks in winter, for two years; and domestic science, 12 weeks in fall, for two years. The faculty numbered in 1902, 59, and the number of pupils in attendance was 1,400. The school has no income from tuitions; but receives from the state $22,700; from the 'Land Grant Fund' of 1862, $32,300; and by the United States

Appropriation Act of 1890, Aug. 30, $25,000, making a total annual revenue of $80,000. It received also for the experiment station (United States Act of 1887, Mar. 2), the sum of $15,000. A weekly periodical, devoted to the interests of the subjects taught in the school, and called the *Industrialist*, is published by the faculty. The library has about 25,000 volumes, and the value of the college property is about $600,000.

KANSAS, UNIVERSITY OF: a state educational institution, situated at Lawrence, Kan. The establishment of a state university was provided for in the state constitution, and an act of the legislature incorporated the university in 1863. In 1865, a preparatory department was opened, and in 1866 one building was erected and the collegiate department established; in 1891, the preparatory department was discontinued. The present organization includes the school of arts, with classical and literary courses leading to the degree of A.B.; the school of engineering conferring the degree of B.S.; the graduate school giving advanced courses in arts and engineering; the school of law; the school of fine arts, offering courses in music, painting and elocution; the school of pharmacy; the school of medicine, offering the first two years of a regular four year medical course; and the summer session of six weeks. The university is the head of the state's public school system, and is in direct connection with the high schools, admitting those who have completed the high school course, or a similar course, without examination; no tuition is charged to residents of Kansas, and the university is open to both men and women; non-residents pay a small fee. The library in 1906 contained 52,000 volumes and a large number of pamphlets; $7,000 are annually appropriated for the purchase of books; the natural history museum contains over 250,000 specimens. In 1903, the state appropriated $50,000 for a building for the law school. Number of students (1906) 1,800; number of professors and instructors, 102.

KANSAS WESLEYAN UNIVERSITY: a coeducational institution, founded in 1886 under the auspices of the Methodist Episcopal Church, at Salina, Kan. In 1906, there were connected with the school 42 professors and instructors, and pupils in attendance 1,182. There were in the library 7,500 volumes.

KANT, *kânt*, IMMANUEL: one of the greatest and most influential metaphysicians of all time; 1724, Apr. 22—1804, Feb. 12; b. Königsberg, Prussia; son of a saddler, whose father had emigrated from Scotland—where the name was spelled Cant. He was educated at the university of his native town, was a private tutor, took his degree at Königsberg 1755, and began to deliver prelections on logic, metaphysics, natural philosophy, and mathematics. In 1762, he was offered, but declined the chair of poetry, and 1770 he was appointed prof. of

logic and metaphysics. Kant's private life was uneventful, yet curious and almost ludicrous in its mechanical regularity. As Socrates could hardly be induced to go beyond the walls of Athens, so Kant clung with oyster-like tenacity to the city of his birth, never leaving it during the 30 years of his professorship. He remained a bachelor all his life. Kant was a man of unimpeachable veracity and honor, austere even in his principles of morality, though kindly and courteous in manner, a bold and fearless advocate of political liberty, and a firm believer in human progress. The investigations by which he achieved the reputation of a reformer in philosophy, refer not so much to particular sections or problems of that science, as to its principles and limits. The central point of his system is found in the proposition, that before anything can be determined concerning the *objects* of cognition, the *faculty* of cognition itself, and the *sources of knowledge* lying therein, must be subjected to a critical examination. Locke's psychology, indeed, at an earlier period in European speculation, had shown a similar tendency; but before Kant, no thinker had definitely grasped the conception of a critical philosophy, and Kant himself was led to it not so much by Locke, as by Hume's acute skepticism in regard to the objective validity of our ideas, especially of the very important idea of causality. The Kantian criticism had a twofold aim: 1st, to separate the necessary and universal in cognition from the merely empirical (i.e., from the knowledge which we derive through the senses); 2d, to determine the limits of cognition.

In regard to the former of these, it is of importance to observe, that Kant did not subject the old psychological doctrine of 'faculties' to any analysis, but attributed to each of these—viz., to the faculties of Sense, Understanding, Judgment, and Reason—certain innate *a priori* forms, conceptions, and functions, which, as constituting the necessary conditions of any experience whatever, possessed, on account of their subjective necessity, a universal subjective validity. Thus, in the Sense, as the faculty receptive of external impressions, there must lie, according to Kant, the forms of Space and Time; in the Understanding, as the faculty by which the manifold in appearance is combined in the unity of conception, the Categories; in the Reason, as the faculty of principles, the Ideas of the Unconditioned and the Absolute; in the Judgment, as far as it is not merely subsumptive, but also reflective, the conception of Design or Conformity to the purpose in view; finally, in the Will or the Practical Reason, the Categorical Imperative of the Moral Law.

In regard to the latter aim of the Kantian criticism—viz., to determine the limits of theoretical knowledge—the efforts of Kant go to show that universal forms existent *a priori* in the human mind, can afford knowl-

edge only under the condition that the objects which they cognize are presented by experience; while for the determining what lies beyond the limits of Experience, they are merely empty forms, by which something indeed is *thought*, but nothing *known*. Even within the limits of Experience itself, we are cognizant, according to Kant, through the forms of the Sense and of the Understanding, not of things as they are in themselves, but only as they appear; hence the opposition between *noumena* and *phænomena*. But when we try to transcend those limits, and to ascertain the intelligible basis of the phenomenal world by the forms of the Sense and the Categories, the *Reason* becomes entangled in an unavoidable Dialectic, for which there is no objective, but only a critical solution. The objects of this Dialectic, the carrying out of which constitutes an essential and leading part of the *Critique of the Pure Reason*, are the Soul, the World, and God; and in relation to the cosmological conceptions in particular (viz., of the Beginning and End of the World, of the Unity or Non-unity of the ultimate particles of Things, of Causality through Freedom or through the necessity of Nature), the Reason is involved in a series of self-contradictions (in the Kantian technology, *antinomies*). The result, according to Kant, of the critical examination of all claims to a knowledge transcending Experience in the regions of rational or speculative Psychology, Cosmology, and Theology, is the necessity for abandoning the hope of attaining such. The idea (native to the Reason) of the Unconditioned is allowed to possess a regulative, not a constitutive value; that is to say, it is a principle necessary for the extension of our inquiries beyond the fixed limits of experience, without, however, yielding us an extended knowledge. So far the philosophy of Kant is purely negative and destructive. Hamilton, Mansel and others have—in regard to the limits of the knowable—merely reiterated the arguments of the great German, while in regard to the points in which they differ from him, as, for example, the *nature* of our knowledge, it is very doubtful whether they are as logical and consistent as their predecessor.

But the austere and stoical morality of Kant was something too *positive* to allow him to rest satisfied with merely negative results; hence he sought in the reality of his Ethics a compensation for the nihilism of his Metaphysics. He maintained the unconditional validity of the Moral Law, and of the consequences which legitimately flow from it. This validity, however, it should be observed, is simply *moral*, and in no way demonstrates the metaphysical reality of the ideas, which, nevertheless, by a power of its own, it compels us to accept. The Reason, as operating in the sphere of Ethics, is called by Kant the Practical Reason, or the Practico-legislative Reason. The ideas which the Practico-legislative Reason postulates are, 1st, the idea of *Freedom;* 2d, of Im-

mortality, as the necessary condition for an ever-increasing approximation to the fulness of the Moral Law; 3d, of the Being of God, as the necessary condition of such a regulation of the universe as shall show the order of nature to be the expression of a moral design. Rejecting all the ontological, cosmological, and physico-theological proofs of the existence of God as mere futilities, Kant based his belief in God on the inward necessities of a practical morality. Religion—i.e., the recognition of our duties as divine commands—has, in the system of Kant, the closest dependence on Morality; in fact, becomes identical with it. This purely ethical conception of religion led him to a criticism of the positive dogmas of theology from an ethical standpoint, in which are contained most of the elements of theological rationalism. The application of the Practical Reason, as understood by Kant, to Æsthetics and Jurisprudence is equally fruitful of important results. Kant's first work, *Gedanken von der wahren Schätzung der lebendigen Kräfte* (Thoughts on the True Estimation of the Active Powers), was published 1747. The principal of its successors were, *Die falsche Spitzfindigkeit der vier syllogistischen Figuren* (The false Hair-splitting of the Four Syllogistic Figures, 1762); *Beobachtungen über das Gefühl des Schönen und Erhabenen* (Observations on the Beautiful and Sublime, 1764); *De Mundi Sensibilis et Intelligibilis Forma et Principiis* (On the Form and Principles of the Sensible and Intelligible World, 1770); this is the prelude to his *Kritik der reinen Vernunft* (Critique of the Pure Reason, 1781); *Grundlegung der Metaphysik der Sitten* (Basis of the Metaphysics of Ethics, 1785); *Kritik der praktischen Vernunft* (Critique of the Practical Reason, 1788); *Kritik der Urtheilskraft* (Critique of the Judgment, 1790); and *Religion innerhalb der Grenzen der blossen Vernunft* (Religion within the Limits of Mere Reason, 1793). For an account of the influence of Kant, see GERMAN PHILOSOPHY. See also Caird's *Critical Account of Kant's Philosophy* (1877); Adamson, *On the Philosophy of Kant* (1880); Watson's *Kant and his English Critics* (1881); Hutchison Stirling's *Text-book to Kant* (1881).

KAOLIN, or KAOLINE, n. *kā'ō-lĭn* [Chin. *kau-ling*, high ridge, or name of a hill where found; F. *kaolin*]: name given by the Chinese to the fine white clay, 'china clay,' which they use in making their porcelain. It is furnished by the decomposition of a granitic rock, the constituents of which are quartz, mica, and felspar, the latter having gradually moldered, by the joint action of air and water, into this substance. A very similar clay, to which the Chinese name has been given, occurs near St. Austel in Cornwall, England, and near Limoges in France; also in Nebraska, and several of the eastern states. In these cases mostly, it is produced by the decomposition of *Pegmatite*, a granite in which there is

scarcely any mica, and very little quartz. All clays are silicates or hydrated silicates of alumina; and the clays named are all much valued by porcelain-makers: they are used also in paper-making and other branches of manufacture.

KAPNITE, n. *kăp'nīt* [Gr. *kapnos*, smoke]: a variety of zinc-spar, containing more than 15 per cent. of iron protoxide.

KA'RAITES, or CARAITES. See JEWISH SECTS.

KARAK, *kâ-râ'k'*: small island of coral formation in the Persian Gulf; lat. 29° 14′ n., long. 50° 20′ e.; circumference 15 m. It has a fertile soil and abundance of good water, but no timber, and is inhabited by Arabs. The Dutch in the middle of the 18th c. were attracted by its safe anchorage, and built a fort on it, but were soon driven away; and the English occupied it 1839-41, and again temporarily 1856, Dec., when their expedition against Persia made a landing on the s.e. coast. Pop. 2,000—3,000.

KARAKORUM, *kâ-râ-kō'rŭm* (or MUZ-DAGH) MOUNTAINS; called also *Tsung-ling:* great range in central Asia, an eastern continuation of the Hindu Kush, s. eastward along the n. frontiers of Kashmir, toward the sources of the Indus. The highest peaks are, next to Mount Everest, the highest on the globe; one marked $K^2$ in Indian survey maps being 28,278 ft. high. The name Karakorum is properly used of an important pass across the chain, the range being known there as Muz-dagh (see KUEN-LUN).—KARAKORUM was the name also of the old Mongolian capital, n. of the desert of Gobi, on the Selenga river: the ruins remain.

KARAMAN, *kâ-râ-mân'*, or CARAMANIA, *kâ-râ-mâ'nē-a:* inland region of Asia Minor, nearly corresponding with the vilayet of Konieh, n. of the Taurus Mountains. The inhabitants are nomadic Turks.—The *town of Karaman* (*Laranda*) has pop. about 20,000.

KARAMZIN, *kâ-râm-zēn'*, NIKOLAI MIKHAILOVICH: 1765, Dec. 1—1826, May 22 (O.S.); b. Bogoroeldza, in the govt. of Simbirsk: greatest of Russian historians. His father was an officer of Tartar descent, and placed him in the army; but he soon retired from it, and applied himself to literary pursuits, and after a tour in Germany, Switzerland, and France, took part in establishing the *Moscow Journal*, and published volumes of tales, poetry, etc. But the work which first gained him a high reputation was *Letters of a Russian Traveller* (6 vols. Moscow, 1797-1801); it had extraordinary influence in the improvement of literary taste in Russia. After other literary attempts of no great importance, he directed his attention to the history of his country. In 1803, he was appointed imperial historiographer, with a pension of 2,000 rubles; and from this time he labored uninterruptedly at his *History of Russia* (12 vols. 1816-29).

For this admirable work Emperor Alexander made him a present of 60,000 rubles. It comes down only to 1611.

KARA SEA, *kâ-râ:* portion of the Arctic Ocean between Nova Zembla and the Siberian coast. Into it the great rivers Obi and Yenisei discharge; and recent attempts, promoted by Nordenskiöld and others since 1876 to establish steam communication in summer between w. Europe and these rivers give the navigability of the Kara Sea commercial importance.

KARASKIER, n. *ka-răs'kĭ-ėr* [Turk.]: one of the chief officers of justice in Turkey, a member of the Ulema.

KARASS, n. *kăr-ăs':* the language spoken by the Tartars of Astrakhan.

KARATEGIN, *kâ-râ-tā-gēn:* country of central Asia, now a province of Bokhara, bordering on the Russian province of Ferghana (Khokand) and on Kashgar. It is a highland region, traversed by the Kizil Su, a tributary of the Oxus. In winter the climate is severe; but much fruit and corn is grown. The inhabitants are mainly Persian-speaking Galtchas, of Aryan stock, and Moslems in faith, with about 5,000 nomad Kirghiz. Pop. less than 400,000.

KARELIA, *kâr-ā-lē'â:* old name for the s.e. part of Finland, anciently a Swedish province, but annexed to Russia by Peter the Great.

KARENGIA, *kăr-ĕn'jĭ-a* (*Pennisetum distichum*): grass closely allied to the Millets, and producing a grain of the same kind; native of central Africa, highly valued as fodder.

KARENS, *kâ'rĕnz:* an Indo-Chinese people allied to the Burmans, but much less civilized, though they are quite industrious, and have a higher morality than some more civilized races. Their language and features have suggested to some a Caucasian origin. They live mainly in the jungles and hilly districts of Burmah, especially British Burmah (see TENASSERIM) and Siam. Their numbers are variously stated at from 200,000 to 400,000. There are various tribes, some wilder than the others; some are nomadic. There are among them pagans and Buddhists. American missions, commenced 1828 by Boardman and Judson (Bapt.) have been very successful among them; in 1884 there were reported 463 churches, 103 ordained native preachers, 363 preachers not ordained, nearly 24,000 communicants. In 1900, there were several schools, a college, a theological seminary, and not less than 500 churches.

KARIKAL'. See CARRICAL.

KAR'LI. See CARLEE.

KARLS'BAD. See CARLSBAD.

KARLS'BURG. See CARLSBURG.

KARLSKRO'NA. See CARLSCRONA.

KARLS'RUHE. See CARLSRUHE.

KARL'STAD. See CARLSTAD.

KARL'STADT. See CARLSTADT.

KARMA, n. *kâr'mă:* in the *Buddhist system,* the impersonation of the inexorable, inflexible law that bound together act and result, this life and the next.

KARMATHIANS, *kăr-mā'thĭ-anz* (Carmathians) [so called from Abu Said Al-Jenabi, surnamed Al Karmata]: Mohammedan sect which sprang up in the 9th c. under the caliphate of Al-Motamed, and which, by a combination of extraordinary circumstances, succeeded in establishing itself for a time as a political power which threatened to overturn the caliphate itself. The particular creed and tendencies of the Ismailis (see that title), began to be fully realized and developed about the middle of the 2d c. of the Hedjrah, through one Abdallah Ibn Maimun, oculist (kaddah) by profession, and Persian by birth. It was he first who, aided by favorable circumstances, matured a plan for the union of the Arabic conquerors and the many races that they had subjected since Mohammed's death, and the enthronement of what afterward was called 'Pure Reason' as the sole deity to be worshipped. His practical exertions, and their wonderful results, soon attracted the attention of the authorities. Obliged to flee from place to place, he sought refuge successively in Karaj, in Ispahan, in Ahwaz, in Basra, finally, in Salamia, in Syria, where he died, leaving his son Ahmed his successor as chief of the sect of the Ismailis. This Ahmed, warned by the fate of his father, proceeded with greater caution, especially with regard to the name of the Imam or Great Prophet, which he left rather uncertain.

Among the missionaries that he sent to Irak, there was one Husein Ahwazi. In the province of Kufa, this missionary, according to some of the authorities, met a man named Hamdan Karmat, whom he converted to the new faith, and at his death laid his mission upon Karmat's shoulders, whom he had previously initiated into the whole extent of the faith. Karmat very soon succeeded in gaining the full confidence of an increasing flock of disciples, and in making them blind instruments of his will. He founded one particular colony of chosen converts around his own house in Kufa. This residence of his, called the House of Refuge, became the centre of an immense conspiracy. From this place all the missionaries were sent out, and all the threads of the great movement were directed. Among the most noted of those missionaries was one Abu Saïd, who was sent first to s. Persia, and afterward to Bahrein, in the Persian Gulf. In less than two years, he had brought over a great part of the people of Bahrein. In 287 Hedjrah the caliph sent an army of 10,000 men against Abu Saïd and his followers, but the latter remained victorious, and made the caliph's

own general prisoner. He now gained undisputed possession of the whole country, and having destroyed the old capital Hajar, made Lahsa, his own residence, the capital of the country. While the court of Bagdad was threatened with destruction by this newly established power on one side, two chiefs of another Karmathian branch appeared, one in the neighborhood of Kufa, the other in Syria. The first was defeated, captured, and tortured to death; the other was more successful. The gov. of Damascus, who marched against him, was beaten most ignominiously. This Karmathian triumph, however, though followed by a few others, was of short duration. A decisive victory (294 Hedjrah), won by the caliph's general, Wasif, forever put an end to this branch of the Karmathians.

Meanwhile, both Karmat and Abu Saïd had become faithless to their own creed. We have no certain dates about the death of Karmat. Abu Saïd was killed, with some of his principal officers, in the bath in his own castle of Lahsa, in 301 Hedjrah, by one of his eunuchs; and four years later, his son, Abu Tahir, became his successor; and he has left his name indelibly stamped upon the annals of Islam. In 311, he seized the town of Basra. In the next year, he pillaged the caravan which went to Mecca, and ransacked Kufa. In 315, he once more reappeared in Kufa and in Irak, and gained so decided a victory over the caliph's troops that Bagdad began to tremble before him. In 317 (A.D. 930), the great and decisive blow against Mohammedanism was struck. When the great caravan of pilgrims for the annual pilgrimage had arrived at Mecca, the news suddenly spread that Abu Tahir, the terror of Islam, had appeared at the head of an army in the holy city itself. All attempts to buy him off failed, and a massacre of the most fearful description ensued. The holy places were desecrated, irredeemably almost. But not satisfied with this, Abu Tahir laid hands on the supreme Palladium, the black stone itself. As often as Abu Tahir did not distinctly hinder them by force, the caravans went on their usual annual pilgrimage. In the year (Hedjrah) 327, the emir of the pilgrimage, Abu Tahir's own personal friend, first succeeded in persuading him to conclude a treaty by which the pilgrimage was allowed again, on payment of five denars for every camel, and seven for every horse. Yet the black stone, notwithstanding all efforts on the part of the court of Bagdad, was not returned.

Abu Tahir died almost absolute master of Arabia, Syria, and Irak, in 332 Hedjrah. It was not until seven years later (A.D. 950), under the reign of two of his brothers who had succeeded him, that the 'black stone' was returned to Mecca for an enormous ransom, and fixed there, on the seventh pillar of the mosque called Rahmat (God's mercy), in the presence of the emir of

the mosque and others, a Spaniard among them. Yet the Karmathians were accused of not having returned the stone itself, or, at all events, of having broken it.

From that time, however, the star of the Karmathians began to wane. Little is heard of them of any import till 375 Hedjrah, when they were defeated before Kufa —an event which seems to have put an end to their dominion in Irak and Syria. In 378 Hedjrah, they were further defeated in battle by Asfar, and their chief lost his life. They retreated to Lahsa, where they fortified themselves; whereupon Asfar marched to Elkatif, took it, and carried away all the baggage, slaves, and animals of the Karmathians of that town, and retired to Basra. This seems to have finally ruined the already weak band of that once formidable power, and nothing further is heard of them in history, though they retained Lahsa till 430 Hedjrah, and later still. See Weil, *Gesch. d. Chalifen;* De Goeje, *Mémoire sur les Carmathes,* etc.; Silvestre de Sacy, *Religion des Druses;* Sale, *Koran;* Palgrave, *Arabia,* etc.

KAR'NAC. See THEBES.

KAROSS, n. *kă-rŏs':* a skin cloak made by the Kafirs of s. Africa.

KARPHOLITE, n. *kâr'fō-līt* [Gr. *karphos,* straw; *lithos,* a stone]: one of the hornblende family, occurring in fibrous tufts of a straw-yellow color.

KARPHOSIDERITE, n. *kâr'fō-sĭd'ėr-īt* [Gr. *karphos,* straw; *sidēros,* iron]: a straw-colored mineral consisting of hydrated phosphate of iron, occurring in kidney-shaped, resinous-looking concretions, resembling iron-sinter.

KARR, *kâr,* JEAN ALPHONSE: French writer: b. Paris, 1808, Nov. 24; d. Nice, France, 1890, Sep. 30, son of a distinguished pianist. He passed with distinction through the College Bourbon, in which he afterward, while very young, became a teacher. While thus employed he fell in love, and began to cultivate the muses; and a copy of verses which he sent to the satirical journal, the *Figaro,* formed his introduction to the literary career. His verses were not accepted by the *Figaro,* but its editor asked him to send something in prose, and the result was that he became a regular contributor to the journal. Disappointed in his attachment, he revealed to the world the story of his grief in a novel *Sous les Tilleuls* (1832, 2 vols. 8vo). Karr soon produced a second novel, which did not diminish his reputation (*Une Heure trop Tard,* 1833); and thereafter, year after year, he produced new works, until he became a prolific author, and a recognized popular favorite. *Fa Dièze* appeared 1834; *Vendredi Soir* 1835; *Le Chemin plus Court* 1836. He has since published *Einerley* (1838); *Geneviève* (1838, 2 vols.); *Clotilde* (1839); *Hortense* (1842); *Am Rauchen* (1842); *Pour ne pas être Treize* and *De Midi à quatorze Heures* (1842); *Feu Bressier* (1845, 2 vols.), originally

published in *Revue des Deux Mondes; Voyage autour de mon Jardin* (1845, 2 vols.); *La Famille Alain* (1848, 3 vols.); *Histoire de Rose et de Jean Duchemin* (1849); *Les Fées de la Mer* (1850); *Clovis Gosselin* (1851); *Contes et Nouvelles* (1852).—*Agathe et Cecile; Fort en Thème; Soirées de Sainte-Adresse; Les Femmes; Raoul; Lettres écrite de mon Jardin; Au Bord de la Mer* appeared 1852-55; *Promenades hors de mon Jardin,* 1857; *La Pénélope Normande,* 1858; *La Pêche en Eau douce et en Eau salée,* and *Dictionnaire du Pécheur,* 1860. The publication of a complete edition of his works commenced 1860. In 1839, Karr became chief editor of the *Figaro,* and in the same year he founded a monthly satirical journal, *Les Guêpes,* which he long conducted with brilliant success, gaining high reputation as a wit and satirist, but making, as was natural, many enemies, of whom one, a woman, made an unsuccessful attempt on his life. Several vols. of *Les Guêpes* have been reprinted; also three vols. of sketches, which, under the title *Bourdonnements,* he began to contribute to the *Siècle* 1852. Karr contributed very largely to periodicals, from which, indeed, many of his works have been republished.

KARROO, or KAROO, n. *kă-rô'* [Hottentot, *karusa,* hard]: name given to the immense barren tracts of table-lands, about 2,000 ft. above sea level, which occupy a large portion of the surface of the Cape Colony and the region n. of it. The karroos of s. Africa are generally composed of shallow beds of the richest clay-soil, resting on a substratum of slate rock, and lack only the fertilizing power of water to render them as productive as any other part of the surface. After heavy rains, luxuriant vegetation quickly springs up, which as quickly perishes; and the different rivers shown on maps as crossing the karroos, are generally little more than dry water-courses, with strings of standing pools in their beds. In the most barren portions the soil is much impregnated with alkaline matter. The principal karroos of the Cape Colony extend n.e. between the Roggeveld and Nieuveld Mountains and the coast ranges, forming a belt of table-land about 350 m. in length, with average width of 60 m., and inhabited by the Boers only in the winter season, when water and grass are abundant. They often rise terrace-like to considerable elevations. Within the last few years, by the introduction of merino sheep, and the construction of dams, land in the karroo is becoming more valuable.

KARS, *kârs:* lately a Turkish stronghold, now a frontier fortress of Russian Armenia, about 110 m. n.e. of Erzerum. It is on a table-land more than 6,000 ft. in elevation; the climate is therefore rather severe. The people mostly are Armenians, who carry on an active transit trade. In 1828, it was taken from the Turks by the Russians under Paskevitch. Kars was brilliantly

defended by the Turks under General Williams for six months 1855. At the beginning of the war of 1877-8, Kars was invested by the Russians, but relieved in July by Mukhtar Pasha; besieged again in autumn, it was carried by storm 1877, Nov. 18. Kars, long a bulwark of the Ottoman empire in Asia, was one of the Armenian fortresses the cession of which to Russia was agreed to by the Berlin Congress 1878. The ancient citadel with the line of encircling forts 10 m. around, have no great military strength as against modern assaults. Pop. 21,000.

KARSTEN, Gustaf E.: a German educator; b. in Petershagenfeld, West Prussia, 1859, May 22; studied at the Universities of Leipzig and Heidelberg; taught Germanic and romance philology at the University of Geneva, Switzerland, and became professor of Germanic languages at the University of Indiana in 1886. He contributed numerous articles and reviews to American and European periodicals, and was editor-in-chief and publisher of the *Journal of Germanic Philology,* which he founded in 1896.

KÂRTTIKEYA, *kârt-tĭ-kā'ya:* the Hindu Mars, or god of war, a being represented by the Purânic legends as sprung from S'iva, after a most miraculous fashion. The germ of Kârttikeya having fallen into the Ganges, it was on the banks of this river, in a meadow of S'ara grass, that the offspring of S'iva arose; and as it happened that he was seen by six nymphs, the *Kr'ittikâs* (or Pleiades), the child assumed six faces, to receive nurture from each. Grown up, he fulfilled his mission in killing Târaka, the demon-king, whose power, acquired by penances and austerities, threatened the very existence of the gods. He accomplished other heroic deeds in his battles with the giants, and became the commander-in-chief of the divine armies. Having been brought up by the Kr'ittikâs, he is called *Kârttikeya,* or *Shân'mâtura,* son of six mothers; he bears the names also of *Gângeya, S'arabhû, Shan'mukha,* and *Kumâra.*

KASAN'. See Kazan.

KASBIN', or Kazvin'. See Casbin.

KASHAN, *kâ-shân':* one of the most flourishing towns of Persia; in a well-peopled, well-cultivated district, 3,690 ft. above sea-level, and 92 m. n. of Ispahan. The vicinity is celebrated for its fruit, and the town for extensive manufactures of silk-stuffs, gold brocade, carpets, and copper-wares. It abounds, like all Persian towns, in mosques, bazaars, baths, etc. Pop. 70,000.

KASHGAR'. See Cashgar.

KASKASKIA RIVER, *kăs-kăs'kĭ-a:* stream in Illinois, rising in the e. part of the state, and falling into the Mississippi at Kaskaskia. It is navigable to Vandalia, abt. 80 m.; total length about 160 m.

KASKASKIA, Ill.: a township in Randolph co., on

both sides of the Kaskaskia or Okaw river, at its junction with the Mississippi opposite Ste. Genevieve, Mo. A part of it now obliterated was the oldest town in the West, the first permanent white settlement in the Mississippi valley. Marquette in 1675 had established a mission among the Kaskaskia Indians near the present Utica, Ill., on the Illinois river; the Jesuits Marest and St. Cosme, guided by Tonty, removed the mission in 1700 to the Mississippi bottoms three miles from the river, near the Kaskaskia. It throve greatly, and was not only a large Indian market, but sent produce and furs to New Orleans. Fort Chartres was built there in 1720; eminent French officers and adventurers came thither—as Vaudreuil and the commandant Chevalier de Bertel—and with its gay French life it was named 'the Paris of the West.' A noted Jesuit college and convent were maintained there. It formed one of the chain of posts by which France was to hem in English colonization; but in 1763 it fell into the hands of the English, who made it their capital in that region. On July 4, 1778, George Rogers Clark (q.v.), with a company of 200 Virginia militia, captured it for the United States by a night attack; this enabled us to claim and obtain possession of the Northwest Territory by the peace of 1783, and changed the destiny of this whole region. It remained a leading western town, and was the capital of Illinois as a territory (1809) and a state (1818); but on removal of the seat of government to Vandalia in 1819, it began to decline. The river steadily encroached on the meadow; and in 1892 united its course with the Okaw, converting a large part of the old site, with most of the ancient buildings, into an island, which in 1899 crumbled into the river after several great floods. North of the junction still remains about a third of the town site, with the foundations of a church and of the capitol building. In 1891, the Illinois legislature appropriated $50,000 to remove the old cemetery to a point on the bluffs, and a large monument has been erected there. Consult: *Kaskaskia: A Vanished Capital* (in *Chautauquan*, Vol. XXX., 1900); *Kaskaskia and its Parish Records* (in *Magazine of American History*, Vol. VI., 1880).

KAS'SON, John Adam, ll.d.: American lawyer and diplomatist: b. Charlotte, Vt., 1822, Jan. 11. He was graduated from the University of Vermont in 1842, studied law at Worcester, Mass.; was admitted to the bar, and in 1857 moved to Iowa and continued the practice of his profession. He became active in the republican party, was a delegate to the national convention in 1860 and chairman of the state committee in the campaign; was assistant postmaster-general in 1861-2; and commissioner to the International Postal Congress at Paris in 1863. He was elected to congress in 1863 and served until 1867; in the next year was elected to the Iowa state legislature, and from 1873 to 1877 was again a member

of congress. He was then appointed minister to Austria, which position he held till 1881. In 1881-4 he served again in congress, and from 1884-5 was minister to Germany; in 1885 he was commissioner to the Kongo International Conference at Berlin, and special envoy to the Samoan International Conference in 1893. In 1897, he was appointed special commissioner plenipotentiary to negotiate reciprocity treaties as provided for by the Dingley Tariff Law, and in 1898 was a member of the American Canadian Joint High Commission. He has written *History of the Monroe Doctrine* (in the *North American Review*, 1881); *History of the Formation of the United States Constitution* (1889); *Evolution of the Constitution* (1904); etc.

KÄSTNER, *kĕst'nĕr*, ABRAHAM GOTTHELF: German mathematician and poet: b. Leipsic, 1719, Sep. 27; d. Göttingen, 1800, June 20. He received an appointment at Göttingen, where, in accordance with the reformatory spirit which animated that university in the latter part of the 18th c., he exerted a powerful influence in delivering mathematical and natural sciences from the bondage of antiquated text-books. His *Anfangsgründe der Mathematik* (6th ed. 1800), and his various other writings, inaugurated a more enlightened era of scientific study in Germany. He took a conspicuous part in the formation of the celebrated union of Göttingen poets, and by his assistance the elder Boye succeeded in introducing, through the instrumentality of the *Musenalmanach*, an entirely new generation of poets to the public. His general popularity was chiefly due to his *Sinngedichte*. A portion of his epigrammatic poems were included in his *Miscellaneous Writings* (1783).

KASTNER, JOHANN GEORG: *kâst'nĕr*, German composer and writer on music: b. Strasburg, 1810, Mar. 9; d. Paris, 1867, Dec. 19. He studied with Maurer and Romer; in 1832-5, composed four operas, of which *Die Königin der Sarmaten* (1835) is chief; and then removed to Paris, where he wrote other operas, among them his best work, *Le dernier Roi de Juda*, presented at the Conservatoire in 1844. From 1837 he also published a series of elementary treatises on music, a once authoritative work on instrumentation being perhaps the best. He was made an associate of the Académie Française.

KAT RIVER: branch of the Great Fish river, in the Cape Colony, rising in the Didimaberg, in the valleys of which, in 1828, were settled, under the care of the London Missionary Soc., a large body of Hottentots and Bastaards, who occupied the country formerly inhabited by the Kafir chief Macomo and his people.

KATA, prefix, *kăt'a* [Gr.]: Greek preposition signifying down, downward, largely used in composition in English scientific terms derived from the Greek.

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